

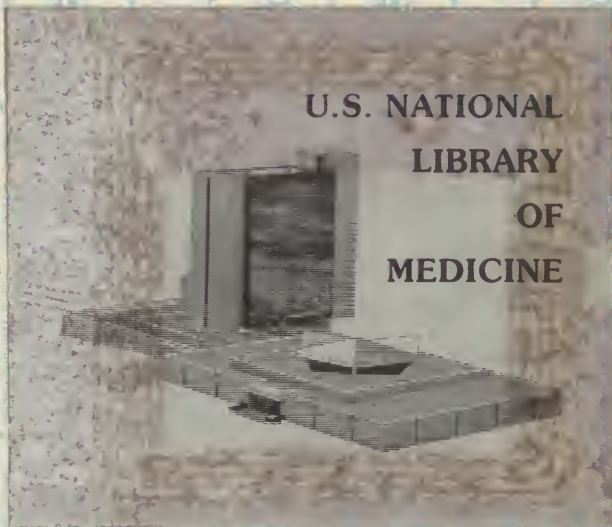
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Dr. Allan J. McLaughlin

THE COMMUNICABLE DISEASES

By Dr. Allan J. McLaughlin

PUBLIC HEALTH IN THE UNITED STATES

An Outline with Statistical Data

By Harry H. Moore

In Preparation

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(See page 74.)

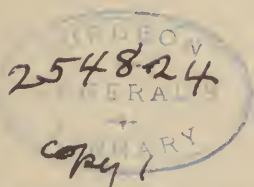
PUBLIC HEALTH IN THE UNITED STATES

AN OUTLINE
WITH STATISTICAL DATA

BY
HARRY H. MOORE

WITH AN INTRODUCTION BY
HAVEN EMERSON

ILLUSTRATED



HARPER & BROTHERS PUBLISHERS
NEW YORK AND LONDON

1923

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1923

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IN THE UNITED STATES

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Printed in the U. S. A.

First Edition

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PREFACE

IN this brief, descriptive outline, an attempt has been made to bring together in compact form the more important statistical data and other facts regarding the principal aspects of the nation's health. These are now available to him who will search them out, but are too widely scattered for most readers. It is hoped that these data and facts thus compiled may be useful to members of the health committees of various civic organizations, to students in high schools, colleges, and schools of social work, and to the administrative and legislative officers of local, state and federal governments, as well as to those engaged professionally in public health activities.

Irving Fisher made the first general compilation of statistical data in the field of public health in the United States. After collecting, over a period of ten years, a wealth of material, he prepared for the National Conservation Committee his now well-known report, "National Vitality, Its Wastes and Conservation." It has been widely useful, and several editions have been exhausted, but now, much of the data in the report have been superseded by new material. Although the plan of the present volume differs considerably from that of Dr. Fisher's report, it is hoped that in some small measure, at least, it may supply the demand for the earlier volume, which still continues fifteen years after its publication.

The author is indebted to Professor Fisher for his stimulating example. He owes much to Edgar Sydenstricker, of the United States Public Health Service, for encouragement and helpful suggestions. Rollo H. Britten has rendered invaluable aid throughout the preparation of the book. In

PREFACE

addition, Allan J. McLaughlin, Joseph Goldberger, Haven Emerson, Victor C. Vaughan, Donald B. Armstrong, Robert E. Chaddock, Thomas D. Wood, Eugene R. Whitmore, Robert D. Leigh, Selwyn D. Collins and Laurence C. Staples have read either the entire manuscript or large sections of it, and have generously made useful suggestions. Dr. Goldberger's and Mr. Staples' detailed and painstaking criticisms have been especially helpful. John B. Andrews, Sanger Brown, 2D., E. Dana Caulkins, Taliaferro Clark, Arthur J. Cramp, Michael M. Davis, Jr., George J. Fisher, Eugene L. Fisk, S. Dana Hubbard, Vernon Kellogg, Lawrence Kolb, Alexander Lambert, Cornelia Lyne, Walter L. Niles, L. G. Nutt, W. S. Rankin, Thomas W. Salmon, R. A. Spaeth and L. R. Thompson have kindly read various sections regarding which they have had specialized knowledge, and have offered many salutary suggestions. While the author has enjoyed the generous assistance of these many persons, he realizes that they are in no way responsible for what he has written. It should be added that all statistical data have been carefully checked by Selwyn D. Collins and Rollo H. Britten, both statisticians of the United States Public Health Service. It is hoped, therefore, that errors have been reduced to a minimum.

H. H. M.

INTRODUCTION

BEGINNING with the effort of that small group of enthusiastic physicians whose inspiration lit the torch of popular education in this country as to the curability and preventability of tuberculosis twenty-five years ago, there has spread throughout the Nation gradually but with increasing force and speed a wave of public and popular interest in health, its protection and promotion, which history will record as one of the most enlightened movements of the past century.

At first the facts availed of in the promotion of the tuberculosis campaign came chiefly from individual experiences of clinicians, or from the records of the bacteriological triumphs of that day.

The individual physician, leading consultant or professor in a medical school, drew upon his case histories and, with an inbred conservatism of the practitioner of medicine, told a story offering hope of prevention to his professional colleagues, and then to leaders of church, social, and to the various philanthropic groups of the laity.

These early promoters of life-saving had little background of mass experience to give much of their arguments a desirable solidity, but what their discourses lacked in completeness of statistical analysis they gained in simplicity of appeal. The specific causes of many diseases were now known. The means of conveyance were shrewdly suspected if not yet proved. Heat and chemicals were known to be capable of destroying the organisms of disease, and cutting the channels of communication between the sick and the well.

For that whole realm of communicable diseases, opened to our imaginations and our study by the clarity and single-

INTRODUCTION

ness of mind of Louis Pasteur, these simple facts are all that are essential now, even though many an unexpected host has been found to intervene between case and case, calling for new resources and ingenuity in saving the well from the sick. Effort spent on teaching, created demand for appropriate action. Action required expenditures, and these in turn brought a new type of critical judgment. Were the results commensurate with the investments? Could we stand the strain of paying for the very health we saw afar, awaiting courageous offerings of money for lives? Were we about to save the unfit at the expense of the fortunate? Was there such a thing as buying health for a whole community, a nation, a race?

Every such query, all the opposition of inertia, the passive weight of ignorance were met by a growing momentum of facts almost smothering the workers in the field, and full of half-truths and misinterpreted applications. Out of the early stages of hope, controversy and uncertainty came the ringing slogan of our first health statesman, Dr. Hermann M. Biggs, "Public Health is purchasable, within certain limitations a community can determine its own death rate."

And so from state to state, from city and town to village and county sped the new belief that counter attack is as good strategy in a war for health as in conflicts between nations.

Enforcement soon became the watchword of the young and aggressive official health boards. Compulsion was provided for in sanitary codes and through the administrative machinery, created often in the midst of epidemics when the public demanded even more action than honest medical science could justify. Power! authority! force! excusable possibly in rare individual cases, and occasionally in handling some of the graver emergencies of epidemic disease, but unthinkable when dealing with the new and expanding phases of preventive medicine, the protection of maternity,

INTRODUCTION

the guardianship of the growth of infants, the leading of the school child into the paths of health.

So recently as 1914 the first Bureau of Public Health Education was established in the Department of Health of the City of New York by Dr. S. S. Goldwater, the Commissioner of Health, and yet in these past nine years nothing has so characterized the activities of official and volunteer health agencies as the amazing development of education, the indispensable, dominant force working for permanent improvement in health.

Now that everyone is a disciple in this wise religion of sanity and sanitation, of happiness through health, we look for quick and easy ways to arm ourselves with facts, to reconvince our doubting memories of past triumphs and spur us on to make truths of prophecies:

We have in this volume of experience, this *vade mecum* for the lecturer, the school teacher, the magazine writer, a philosophy of social action, a compendium of facts which reminds one in every chapter, to our humiliation, that we know infinitely more than we use.

Mr. Moore has put the medico-social professions not less than the laity under a lasting debt by giving in logical order, in tempting form and supported by accessible reference to facts, all the essential information upon which well informed opinion may be based in the scientific and economic aspects of applied preventive medicine.

HAVEN EMERSON.

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Public health is the science and the art of preventing disease, prolonging life, and promoting physical health and efficiency through organized community efforts for the sanitation of the environment, the control of community infections, the education of the individual in principles of personal hygiene, the organization of medical and nursing service for the early diagnosis and preventive treatment of disease, and the development of the social machinery which will ensure to every individual a standard of living adequate for the maintenance of health; organizing these benefits in such fashion as to enable every citizen to realize his birthright of health and longevity.

—C.-E. A. WINSLOW

PART I

HISTORICAL REVIEW

Our national health is physically our greatest asset. To prevent any possible deterioration of the American stock should be a national ambition.

—THEODORE ROOSEVELT.

Public health is the foundation on which reposes the happiness of the people and the power of a country. The care of the public health is the first duty of a statesman.

—DISRAELI.

Give me health and a day and I will make the pomp of emperors ridiculous.

—EMERSON.

PUBLIC HEALTH IN THE UNITED STATES

AN OUTLINE WITH STATISTICAL DATA

CHAPTER I

MAN'S CONCERN THROUGH THE AGES FOR HIS HEALTH

SINCE men achieved the first stages of civilization they have sought consciously or unconsciously to be healthy. When they have been sick, there has been nothing they have refused to do to obtain health. They have been willing to be half drowned, to be buried in the earth up to their chins, to be pierced with needles and branded with hot irons, to have leeches suck their blood and to swallow vile tasting concoctions—and to pay for all this—in the hope of attaining cure from disease and of regaining health.¹

Most primitive peoples believed that evil spirits or other supernatural agencies were the cause of disease. Among the various tribes now living in Borneo it is believed that, when anyone is very sick, the soul has left the body and a "soul-catcher" is dispatched to capture it.² The Samoyed of Asia attempted to frighten away demons of disease by donning the skin of a beast and by shouting, raving, slapping the hands, and by assuming in other ways a terrifying aspect. To prevent a recurrence of the disease—in other words, to keep the evil spirits away—the medicine man gave the patient a fetish to be hung about the neck or to be

otherwise worn upon his person.³ It is true, primitive man, like people to-day, was most concerned about his health when he was sick; but he took measures to prevent disease—he guarded his fetish most carefully.

Notwithstanding early man's superstitions, his knowledge of preventive medicine was far from contemptible. He used the vapor bath and cimicifuga oil against rheumatism; he recognized the importance of keeping the skin and bowels open, and for this purpose used catharsis, the geyser, and the sweat-oven.⁴ Among the first civilized people, the Sumerians, who lived in the valleys of the Tigris and Euphrates Rivers, there have been found to have existed well-developed sanitary measures, including cesspools. In Nineveh, the capital of the Assyrian Empire, a complete system of sewers was in use and water was brought long distances. In Egypt a well 297 feet deep, built about 3000 B.C., shows the efforts which man was willing to use in those early days presumably to insure pure water.⁵

The ancient Hebrews were pioneers in public health work. Health was one of the chief concerns of Moses. He prescribed few remedies for disease; he was interested chiefly in preventive measures. Two long chapters in the Book of Leviticus are given over to the treatment of lepers and sanitary problems connected with their dwellings. The Hebrews quarantined persons with leprosy and burnt their excreta and any articles which might be contaminated.

Among the Persians of the sixth century B.C., Cyrus the Great in his military campaigns took drinking water from home for his army. Cyrus is quoted as reporting to his father that he had provided his army with competent physicians. To this his father replied: "But these physicians, my son, of whom thou speakest, are like menders of torn garments, and thus, they cure those who have fallen sick. Thy chief anxiety should be to provide for health, for thou oughtest to take care to prevent thy army from falling into sickness at all." ⁶

Empedocles and Hippocrates were famous sanitarians of Greek civilization. Empedocles originated the doctrine that the human body is made up of four elements: earth, air, fire, and water, and that their balance in the body results in health. He is said to have engineered the draining of a marsh which rid the city of Selinus of a plague. Hippocrates wrote three books on hygiene and sanitation; he advocated the boiling of drinking water.⁷ The Greeks were pioneers in the field of physical education. In the training of the body, the youth of Athens and Sparta spent much of their time. The chief instrument of the Spartan boy's education was gymnastic exercises—running, jumping, discus throwing, javelin casting, boxing, and, above all, wrestling. When the youth reached the age of eighteen, he devoted two years to the study of arms and military maneuvers with a rigid physical examination every ten days.⁸ While military supremacy may have been the principal aim of the Greeks, they realized apparently that for the attainment of this end physical fitness was essential.

The aqueducts and sewerage systems of Rome are to this day a marvel. In early times, Rome obtained her water from the polluted Tiber. The Romans soon recognized the danger of using such water and expended large sums of money in constructing aqueducts. They seem to have discovered the truth which many do not recognize to-day, that public health is purchasable. The famous Cloaca Maxima, constructed 2700 years ago for sewage disposal, is still in use to-day, and several of the great aqueducts in Rome and her colonies can now be seen. That built by Quintus Marcius was 56 miles in length.

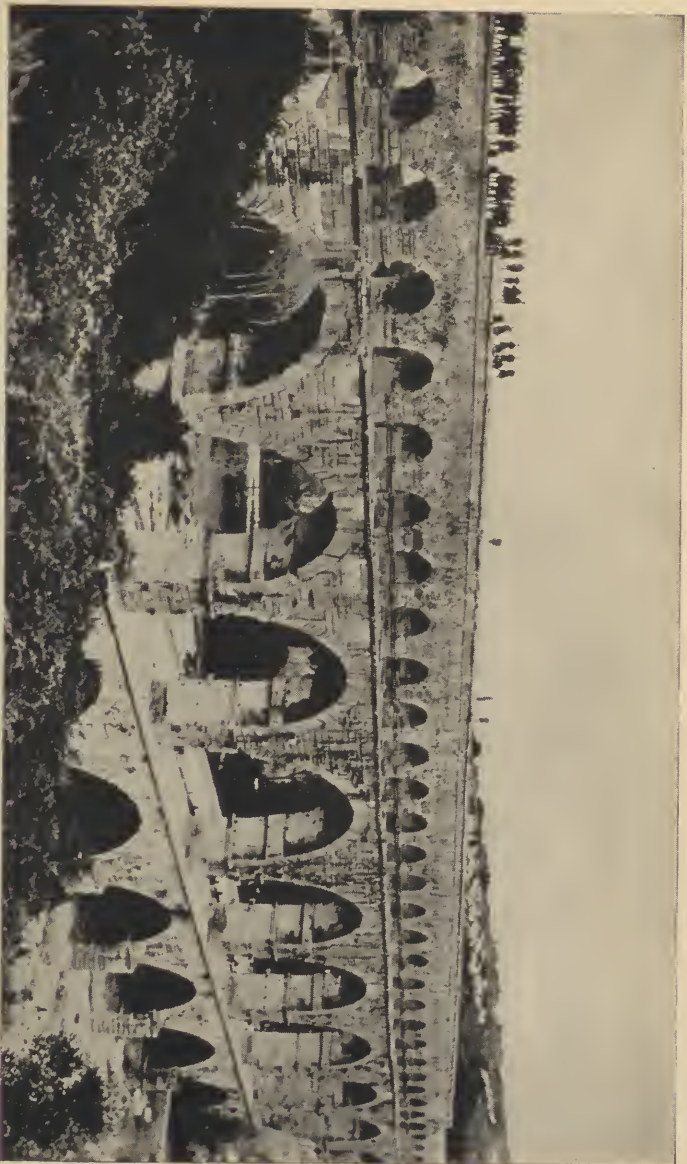
The fall of Rome and the Dark Ages which followed were marked by retrogression in sanitary science. Sanitation gave way to filth and pestilence. Europe for long centuries was scourged with disease, the Black Death of the fourteenth century killing nearly half of the population. In the middle of the nineteenth century, deplorable sanitary

conditions among the poor revealed by Sir Edwin Chadwick⁹ and an epidemic of cholera led to a revival of sanitation under the leadership of Sir John Simon. This resulted in the construction of water and sewerage systems for the City of London.

The work of Chadwick and Simon brought in the first phase of the modern public health movement. This consists of the disposal of waste, the supplying of pure water, and the elimination of conditions under which insect carriers of disease breed. In other words, public health first concerned itself with the control of the environment. The utilization of such measures has led to remarkable achievements; in all parts of the world wherever the appropriate procedure has been applied, cholera, bubonic plague, yellow fever, malaria, and typhoid fever have been brought under subjection.

The second phase of the modern public health movement includes measures for the control of infections transmitted from one person to another. Here the bacteriologist rather than the engineer has assumed the leadership. The discoveries of Pasteur and Koch fifty years ago in the field of bacteriology led to isolation and disinfection as measures for preventing the spread of disease; the work of Jenner and of Pfeiffer and Kolle brought in the use of vaccines; and the researches of Behring and Kitasato, the utilization of sera for the treatment of disease. Now there are available a vaccine for typhoid fever and an antitoxin for the cure of diphtheria as well as a toxin-antitoxin for its prevention.

The problems of infant mortality, tuberculosis, and various other diseases have led to the development of a third phase of public health—that of personal hygiene. In the prevention of tuberculosis and the diseases of infancy, environmental control and bacteriology have important functions, but satisfactory progress will not be made, under existing scientific knowledge, unless the care of the body receives attention. Tuberculosis patients and those threat-



THE PONT DU GARD

This old Roman aqueduct forms but a small portion of the conduit built to carry water twenty-five miles from two springs to Nîmes, France.

ened with the disease must be taught the value of fresh air, rest, and proper food; and, in the prevention of infant mortality, the mother must understand that her own health, together with pure milk and sufficient sleep for the baby, are essential. The prevention of tuberculosis and infant mortality appears to be largely a problem of giving information and teaching adults and children proper habits of living. Personal hygiene, therefore, is largely a matter of public health education—a new type of activity, which must be developed along with personal hygiene. Without education, results from other measures will be greatly limited; but with the wide dissemination of knowledge regarding disease and its prevention, the health of the people may be immeasurably improved.

During recent years the interest of sanitarians* has broadened and now they are beginning to concern themselves with the economic and sociological aspects of the public health movement. The modern sanitarian sees that poverty as well as ignorance is a contributing cause of infant mortality, that overwork and fatigue appear to enhance susceptibility to some infections. In addition, there are specific diseases affecting only the workers in certain industries. Although General Gorgas at Panama dealt with pneumonia by raising the wages of the employees upon the Isthmus, it is questionable whether most sanitarians can devise measures to abolish poverty as they have invented measures for draining swamps of disease breeding mosquitoes. It is becoming increasingly evident, however, that the sanitarian of the future must take into consideration the economic and social causes of disease and co-operate with those whose chief concern is the elimination of adverse social and economic conditions.¹⁰

* The term "sanitarian" is used in this book, in accordance with the example of the United States Public Health Service and the American Public Health Association, to include all persons engaged professionally in public health work—the health officer, the bacteriologist, the engineer, the nurse, and others so employed.

Man's quest for health throughout the ages has been influenced largely by his superstitions. Even as recently as the seventeenth century, A.D., Sir Kenelm Digby proposed as a remedy for fever that the physician pare the patient's nails, put the parings in a little bag, hang the bag around the neck of a live eel and place the eel in a tub of water.¹¹ And Martin Luther firmly believed that "pestilence, fever and other severe diseases were naught else than the devil's work." Even to-day, it is suspected, some persons of apparent intelligence carry a horse chestnut or red kidney bean as a sure safeguard against rheumatism; medicine men still prey upon human gullibility. The modern public health movement based on science has only begun.

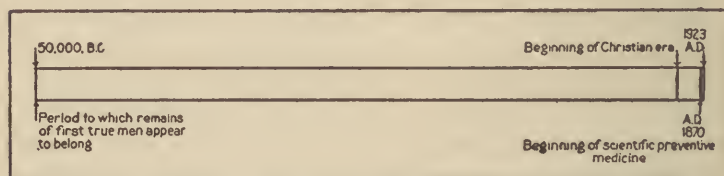


FIG. 1.—THE PERIOD OF SCIENTIFIC PREVENTIVE MEDICINE IN RELATION TO THE TIME MEN HAVE LIVED ON THE EARTH.

Nevertheless, scientific discoveries in the fields of engineering, bacteriology, and hygiene during the last fifty years have made wonderful advances possible. Virtually all the achievements in public health during the Christian era have occurred within this brief period (see Figure 1). Until the time of Pasteur and Koch, public health had not regained the position it had reached in the days of the Romans and earlier civilizations. To-day its achievements and the possibilities of further advances challenge the enthusiasm and interest of mankind. What has been done, what is being done, and the difficulties which retard public health progress in the United States,—these will be briefly considered in the following pages.

PART II

THE HUMAN AND ECONOMIC COSTS OF
DISEASE

To die of age, is a rare, singular, and extraordinary death.

—MONTAIGNE.

Disease is a crime; a man has no moral right to be sick.

—C. G. FINNEY.

The fate of a nation has often depended on the good or bad digestion of a prime minister.

—VOLTAIRE.

Health is the first wealth.

—EMERSON.

CHAPTER II

WHAT MAKES MEN DIE BEFORE THEIR TIME?

HUMAN beings in the United States to-day are living longer than ever before. Our average length of life, according to the 1920 census, is 56 years.¹ It was shorter for the decade 1901-1910, however, than in several other countries. Figure 2 on the following page shows the average length of life for certain representative nations.² Whether the difference shown has been maintained during the past ten years is not known.

During the past 75 years, the average duration of life has been increased by not less than 15 years in many of the nations of the world. (See Figure 3.)³ To-day it is far greater than in ancient times; and there is nothing "inherently impracticable or extravagant in the proposal," states a resolution of the American Public Health Association, "that within the next 50 years as much as 20 years may be added to the expectancy of life which now prevails throughout the United States."⁴

The mortality or death rate, in a general way, varies inversely with the length of life; as the death rate goes down, the average length of life increases. The rapid lengthening of life in the United States, therefore, has been coincident with the rapid dropping of the death rate during recent years, to 13.1 per 1,000 in 1920 and to 11.6 in 1921. Here, perhaps, it has stopped temporarily. In fact for 1922, the rate was 11.9, slightly higher than for 1921.⁵ If, however, it were possible, through a concerted effort of state and city departments of health, to maintain this progress and

reduce the rate during 1924 to 11.0, there would be at the end of that year (with no change in the birth rate) 90,000 more human beings alive in the United States than there would be if the 1922 rate remained unchanged.

Causes of Death.—What are to-day the causes of death? During the calendar year ending December 31, 1920,

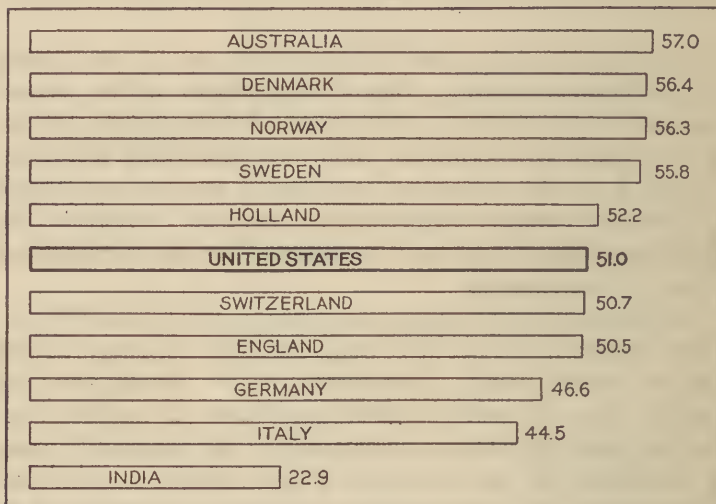


FIG. 2.—AVERAGE LENGTH OF LIFE IN CERTAIN COUNTRIES.

For each country the figure applies to the period 1901-1910, except for Denmark for which the period of 1906-1910 is used. The figure for the United States refers to white persons in the original registration area.

1,142,558 persons⁶ died within the registration area of continental United States, which then comprised 82.2 per cent of the total population (Figure 4 shows the composition by states of the death registration area of 1922).^{*} It

^{*} States are admitted to the death registration area and to the birth registration area when their deaths and births respectively are reported to state authorities in accordance with standards established by the Bureau of the Census.

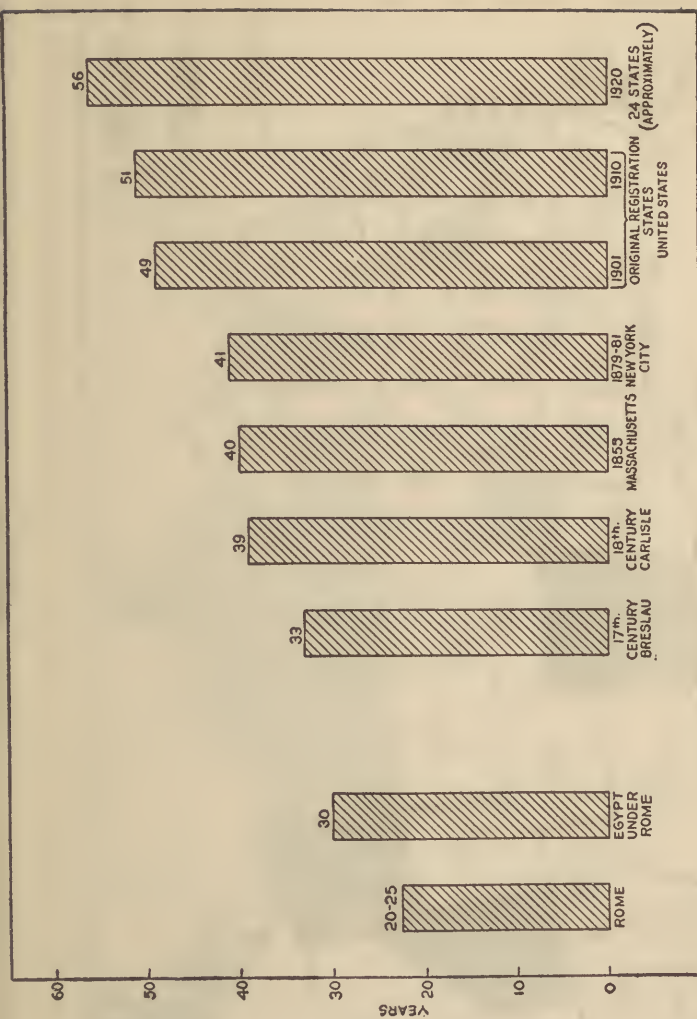


FIG. 3.—INCREASE IN AVERAGE LENGTH OF LIFE, BASED ON REPRESENTATIVE LIFE TABLES.

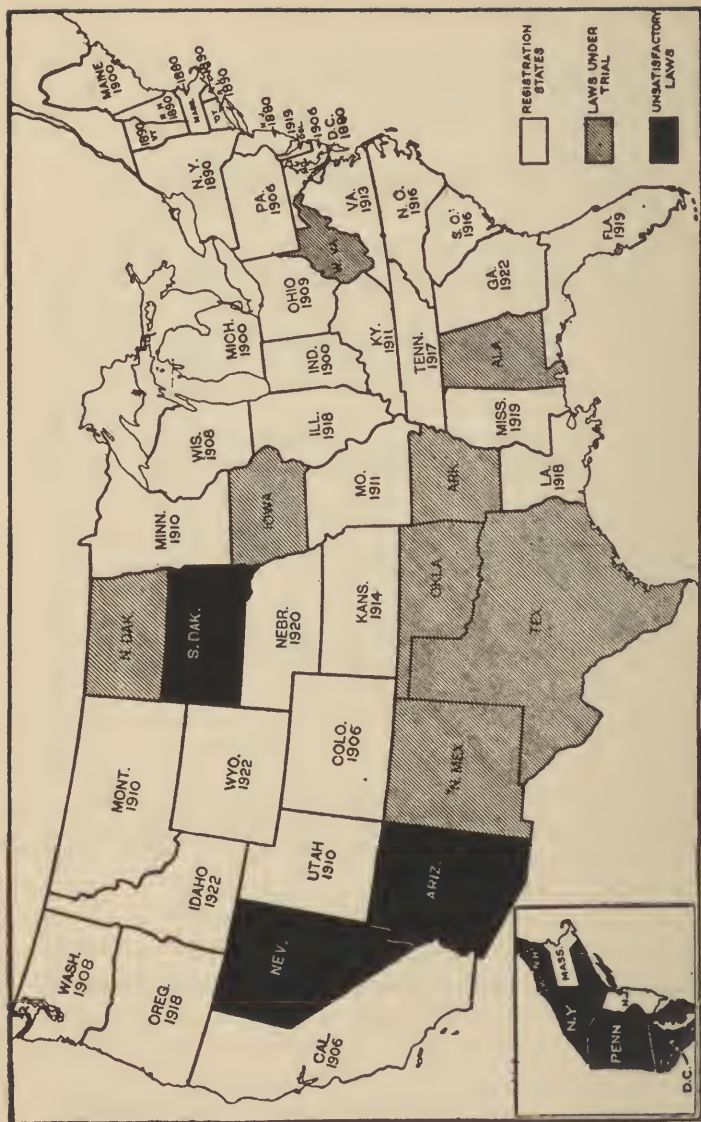


FIG. 4.—STATES INCLUDED AND NOT INCLUDED IN THE DEATH REGISTRATION AREA, 1922, WITH DATES OF ADMISSION.

In 1880 there were only two states (Massachusetts and New Jersey) and the District of Columbia in the death registration area (see inset).

will be seen in Figure 5 on the following page that organic heart diseases caused the largest proportion of deaths (10.9 per cent of the total), and that pneumonia caused the next largest proportion, 10.5 per cent.⁷ The diagram shows the percentage of all deaths due to various diseases recorded as the immediate cause of death. The figures are not entirely reliable because sometimes a disease (tuberculosis, for instance), merely present at the time of death, may be reported as the cause, when a careful post-mortem examination would reveal the immediate cause to be some other disease. To die *with* a disease is not the same as to die *of* a disease.

Among the frequent causes of death is a disease not included in the segmented circle, i.e., syphilis. This omission is due to the fact that, in the records of immediate causes, either a camouflaged name for syphilis is given, or an incidental cause rather than the chief cause of death is reported. All locomotor ataxia, for instance, is due to syphilis, and it is essentially a type of syphilis. General paresis (softening of the brain) is also a form of syphilis. Probably 50 to 95 per cent of deaths from disease of the aorta, 10 to 20 per cent of deaths from congenital debility, premature birth, and malformation, and a smaller proportion of deaths from many miscellaneous diseases are primarily caused by this one disease.⁸ The percentage given in the detached segment (in Figure 5) as due to syphilis, 10 per cent, is based upon tentative estimates proposed by Sir William Osler.

In considering the various causes of death, one's interest centers, perhaps, upon one or more diseases with which one has had personal experience. From the standpoint of the health and welfare of the entire population, one should be most interested in the prevention of those diseases—the sanitarian would say—which cause men generally to die prematurely. The diseases in the upper left part of the circle are, for the most part, the organic, degenerative diseases of old age; but of those in this group, cancer, heart

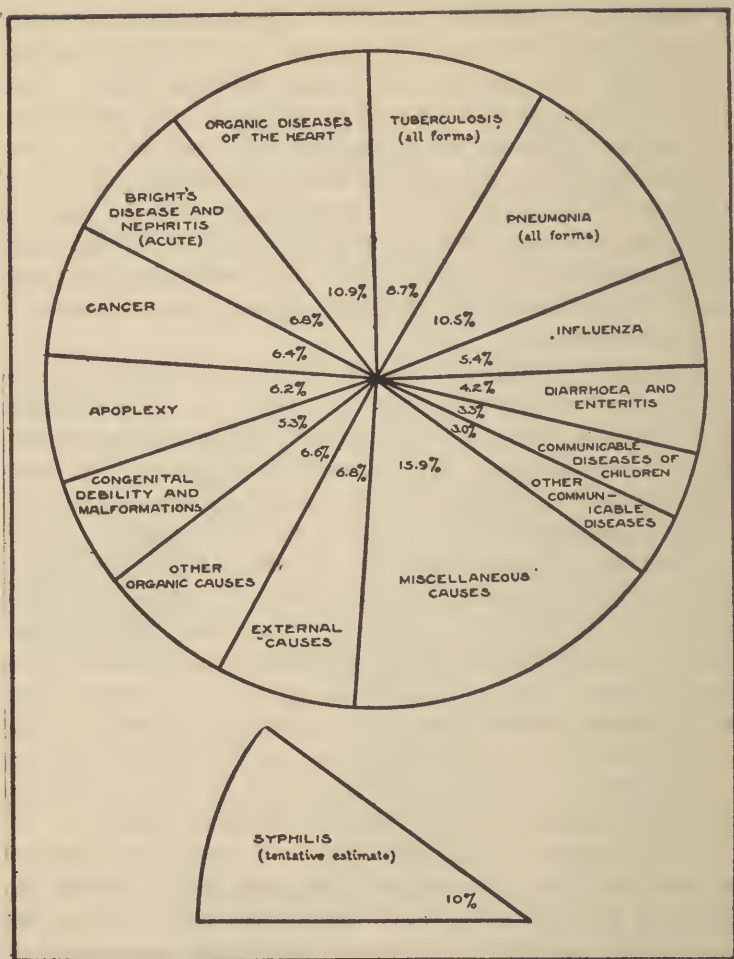


FIG. 5.—PERCENTAGE OF DEATHS RECORDED DUE TO SPECIFIED CAUSES IN THE UNITED STATES IN 1920. FOR THE DEATH REGISTRATION AREA (82 PER CENT OF TOTAL POPULATION).

Note: On account of the influenza epidemic of 1920, there were during that year an unusually large number of deaths ascribed to pneumonia and influenza.

diseases and kidney diseases attack persons of middle life also, and they are therefore especially serious. But the most important causes of death (see also Figure 6)—those diseases which cut men off from life long before they have lived their threescore years and ten—are the infectious disorders, tuberculosis, pneumonia and influenza, syphilis, diarrhœa, and the communicable diseases of childhood.

Death Rates by Localities.—Is life a greater risk in one part of the country than in another? It is difficult to

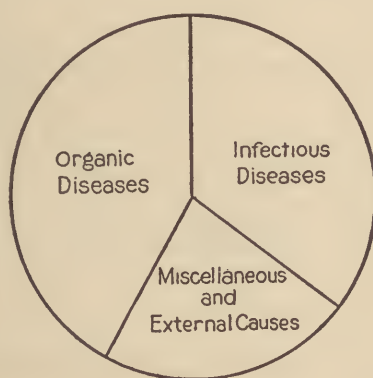


FIG. 6.—PROPORTION OF DEATHS DUE TO THREE CLASSES OF DISEASE IN THE UNITED STATES REGISTRATION AREA IN 1920.

say whether chance favors the child destined to live in the crowded city or the child who spends its life in the fresh air of the country. It is known that for 1910 (for the original registration states) the average length of life in the country was 56 years, while in the cities it was slightly more than 49, the difference among males being approximately eight years and among females six years.⁹ However, the length of life in cities in the registration area appears to be increasing somewhat more rapidly than in the rural districts.¹⁰ In New York State there is a marked difference in the trend,

the death rate for the cities going down (as the length of life increases) and the rate for rural districts remaining nearly stationary.¹¹ (See Figure 7.) The facts are interesting, but one should avoid arriving at conclusions hastily. Influences which must be considered are racial differences, immigration and various aspects of environment, especially the

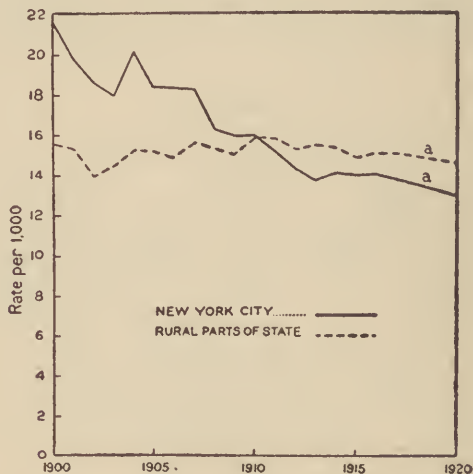


FIG. 7.—MORTALITY FROM ALL CAUSES PER 1,000 POPULATION IN NEW YORK CITY AND IN RURAL PARTS OF THE STATE OF NEW YORK, 1900 TO 1920.

* Rates for 1918 and 1919 omitted, to avoid the effect of the influenza epidemic.

employment in factories of city dwellers and differences in age composition.

Among the states also there is variation—it appears that life is safer and men live longer in some states than in others. Although the death rate does not constitute nearly so good an index of health as do morbidity statistics, it helps us in determining, if all the important influences are considered, where the healthiest communities may be found.

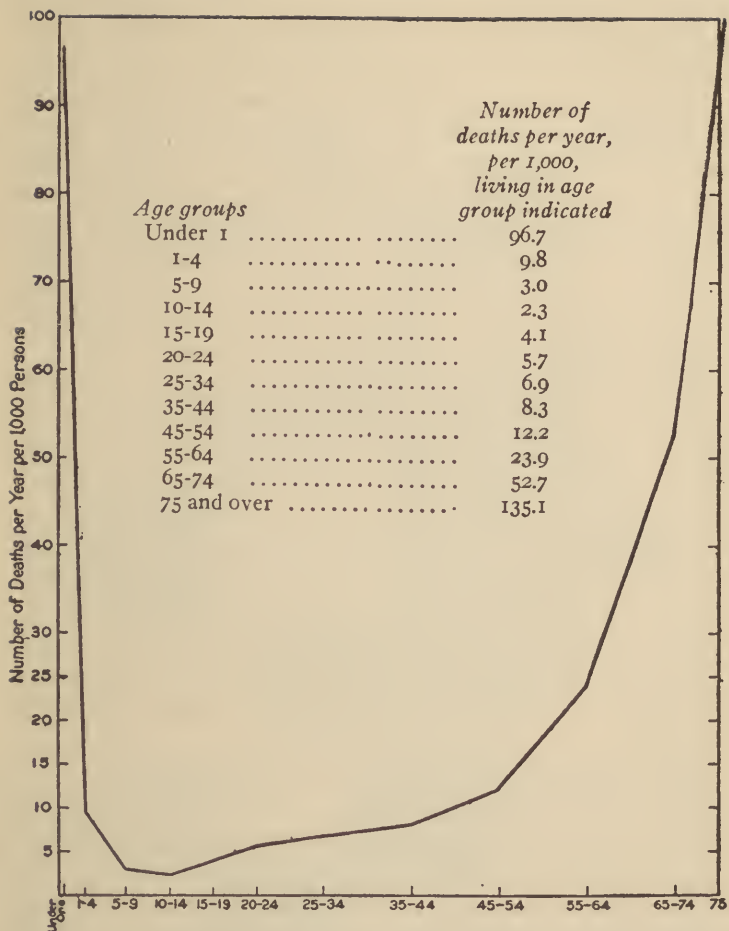


FIG. 8.—NUMBER OF DEATHS PER 1,000 PERSONS IN SPECIFIED AGE GROUPS IN UNITED STATES DURING 1920. FOR THE REGISTRATION AREA (82 PER CENT OF THE POPULATION).

Minnesota, Mississippi, Kansas, Montana, and Washington (ignoring the negro population) appeared in 1920 to be the healthiest registration states in the Union.¹² Doubtless the reason that Colorado and California are among the states having the highest death rates is that a considerable number of sick persons go to these states in search of health and die there. It is possible that certain eastern states have a high death rate because a large proportion of their population is engaged in industrial occupations.* In general, while the variations observed may be accounted for to a slight extent by racial and other hereditary differences, it is probably true that the health of the people in some states is better protected both through climatic influences and organized health measures than in other states.†

Relative Mortality of White and Negro Races.¹³—In all states of the registration area the death rate among negroes is considerably higher than among the white population. The 1921 death rate (adjusted for differences in sex and age) for the white population of Florida, for instance, was 10.1, and for the colored, 16.0; in Maryland, 11.7 for the white population and 20.8 for the colored. There is also a wide variation in the negro death rate: it varies (among the states whose rates are reported by color for 1921) from 15.0 in Mississippi to 21.7 in Pennsylvania. It is likely that this difference is due at least partially to occupation.

Age at Death.—The curve on the preceding page (Figure 8) shows that the death rate is higher during the first year of life than at any time prior to extreme old age.¹⁴ It is still high during the one to four year period. It is lowest between the ages of five and fourteen, and rises gradually from that time, especially after the age of fifty is reached. Life appears to be safest in childhood.

* See also page 359.

† See Appendices 1 and 2 (pages 439 and 441) for mortality tables by states.

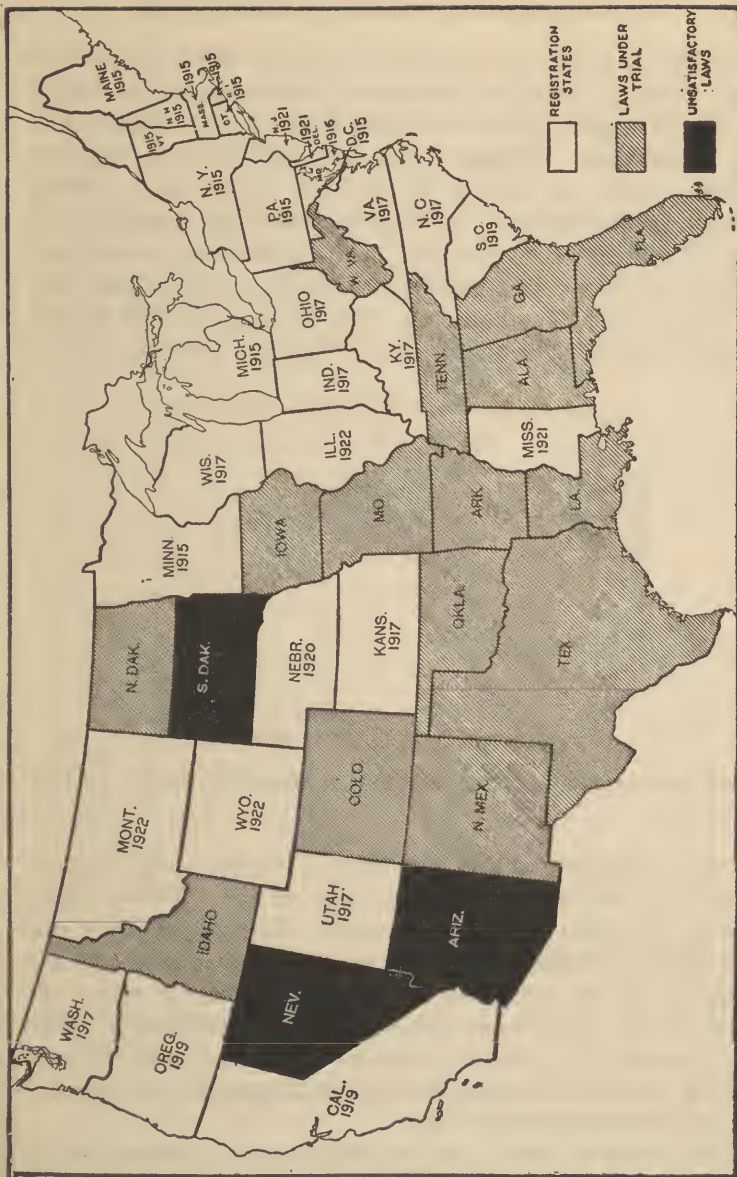


FIG. 9.—BIRTH REGISTRATION AREA IN (MAY) 1923. FIGURES INDICATE THE YEARS IN WHICH STATES WERE ADDED.

Infant Mortality.—This term refers to deaths under one year of age; it does not include stillbirths, premature births, or miscarriages. Infant mortality is one of the saddest facts of civilization. Queen Anne had eighteen or nineteen babies. Only one lived to be as old as eleven years. Being a baby, it has been said, is the most hazardous occupation in the United States.¹⁵ But not all the statements made about infant mortality, fortunately, are facts; it is not true that of every five babies born, one dies before it is able to talk or walk about. The fact is that of every 1,000 babies born,

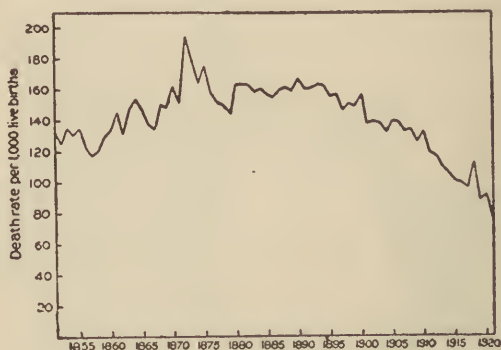


FIG. 10.—INFANT MORTALITY RATES IN MASSACHUSETTS BY YEARS 1851-1920.

76 die (according to the 1922 figures for the birth registration area) before they reach one year of age. This is about one in 13, which is alarming enough. In 1920, the rate was considerably higher—86 per 1,000.¹⁶ Figure 9 shows the composition by states of the birth registration area. In May, 1923, there were three states not sufficiently interested, apparently, in the problem of infant mortality to comply with the requirements of the Census Bureau regarding the registration of births.

The trend in the infant mortality rate is illustrated by the curve for the state of Massachusetts (see Figure 10),

where the rate was almost 160 about 1900, but less than 80 in 1921.¹⁷

Infant mortality after the first month has been greatly reduced through such measures as better feeding and general care, but the death rate during the first month of life and the stillbirth rate have remained almost without change during the past fifteen or twenty years.¹⁸ The precariousness of life during the first month is suggested by Figure 11.¹⁹ "Infant mortality," says Sir Arthur Newsholme, "is the most sensitive index we possess of social welfare. If babies were born and well cared for their mortality would be negligible."²⁰

Why is there such a high mortality among babies under one year of age? In the four largest cities of the United States, the cause of 44,226 deaths²¹ of children under one year of age is recorded as follows:

	<i>Per Cent</i>	
Acute gastro-intestinal disease.....	28.0	} 72 per cent
Prematurity, congenital debility and marasmus....	25.5	
Acute respiratory diseases.....	18.5	
Acute infectious diseases.....	5.4	
Tuberculosis (all forms).....	2.0	
Syphilis	1.2	
Malformations, injuries at birth, and other conditions of the new-born.....	5.8	
Convulsions	3.4	
All others	10.2	

The diseases enumerated above, however, are, for the most part, only the immediate causes of death. The fundamental reasons do not appear in the records. Among the causes which should be sought out and prevented by the mother and by the sanitarian are improper feeding, impure milk, lack of prenatal care, gainful employment of mothers, poor housing, general lack of cleanliness, alcoholism, and syphilis. Another cause of the high death rate among babies during the first year of life is poor grade obstetrical work.

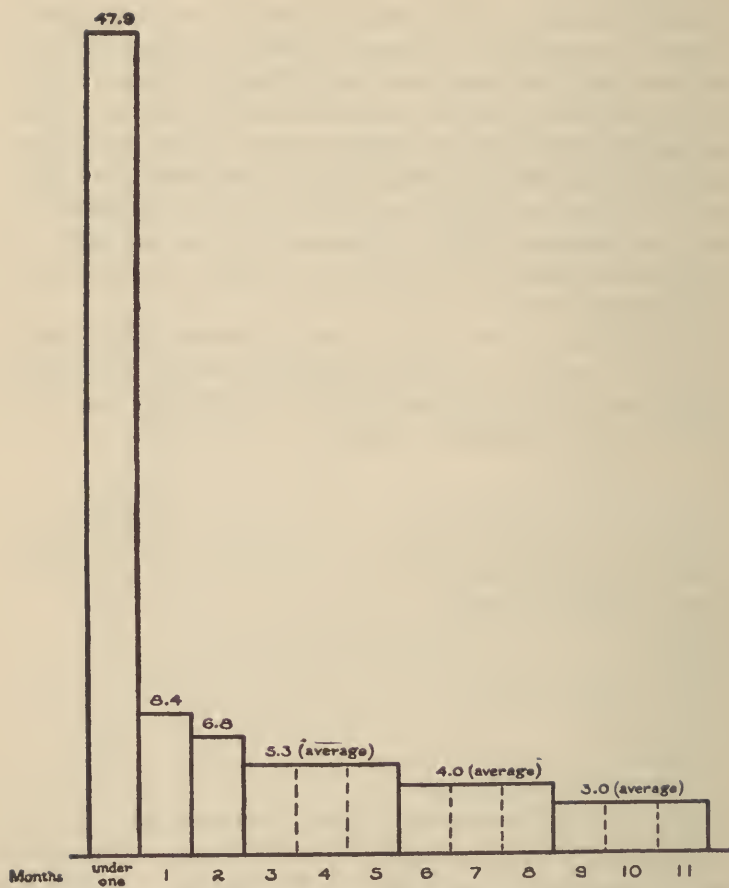


FIG. 11.—PERCENTAGE OF DEATHS OCCURRING IN EACH MONTH DURING FIRST YEAR OF LIFE. BIRTH REGISTRATION AREA, 1919.

An effective program for the prevention of deaths in early infancy must combine prenatal work with far better confinement care.²² It is the consensus of the best medical opinion that the Wassermann examination for syphilis should be given to all expectant mothers and appropriate anti-syphilitic treatment when the disease is indicated.

The infant mortality rate is much higher during hot weather. During the years 1907 to 1910, in New York and Chicago, the rate for August was about double the rate for June.²³

Numerous studies show that the rate is higher among the poor than among the well-to-do. Of 1,431 children born alive in Johnstown, Pennsylvania, the mortality rate was 256 per 1,000 for babies whose fathers' wages were lowest and only 83 per 1,000 among those whose fathers' wages were most nearly adequate. The following table²⁴ is illuminating:

<i>Annual Earnings of Father</i>	<i>Infant Mortality per 1,000 Births</i>
Under \$521	255.7
\$521 to \$624.....	157.6
\$625 to \$779.....	107.1
\$780 to \$899.....	142.9
\$900 to \$1199.....	101.4
\$1200 or more.....	83.3

In England and Wales the infant mortality rate for 1911 in families whose wage earners were unskilled laborers was 152.5; in families whose wage earners were skilled laborers, 112.7; and in families of the upper and middle classes whose wage earners were largely salaried persons, 76.4.²⁵

These data do not necessarily mean, however, that poverty or the environmental conditions associated with poverty account entirely for the difference in the infant mortality rate. Heredity—the inheritance of feeble resistance to disease—may play an important part, possibly a predominating

rôle. No conclusive data are yet available on the relative importance of environmental and inherited factors.²⁶

There appears to be a wide variation in the infant mor-

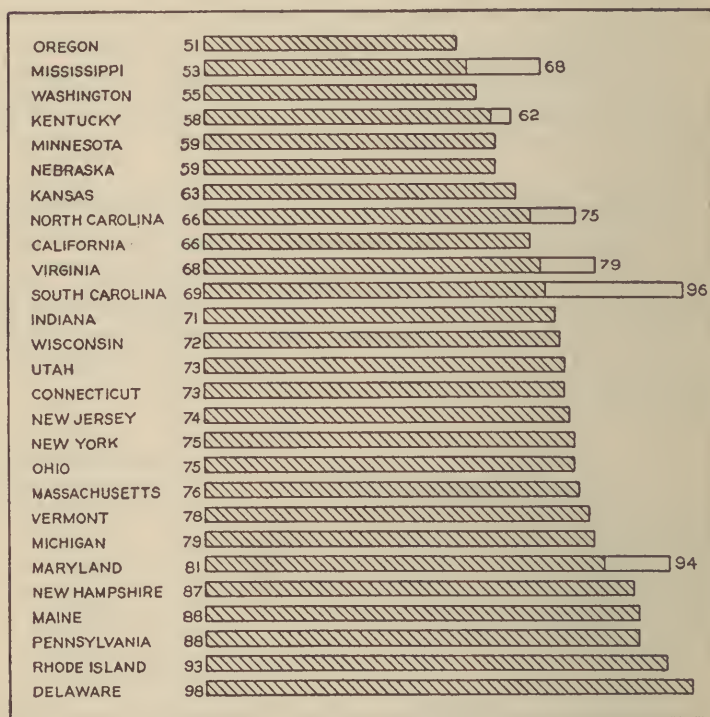


FIG. 12.—INFANT MORTALITY RATES IN BIRTH REGISTRATION STATES, 1921. (DEATHS PER 1,000 BIRTHS.)

The figures shown at the right of the graph indicate the rates for both white and colored population for six Southern States, while the left hand figures applying to these six states indicate the rate for the white population only.

tality rates according to the birthplace of the mother. The average rate for the five-year period 1916-20 for the birth registration area of the United States varied from 68 to 125.5 per 1,000, as will be seen in the following table:²⁷



Courtesy of American Red Cross

OUT OF EVERY HUNDRED BABIES BORN IN SOME STATES AND CITIES OF THE UNITED STATES
TEN OR MORE DIE BEFORE THEY REACH ONE YEAR OF AGE

<i>Birthplace of Mother</i>	<i>Infant Death Rates per 1,000</i>
Scandinavia	68.
Great Britain	81.5
United States (white).....	83.
Russia	84.
Germany	91.5
Ireland	97.
Italy	99.
Hungary	100.
Austria	125.5
United States (negro).....	153.

The success of various programs for the prevention of infant mortality and the existence of a relatively low death rate among children in certain communities shows that the high rate in other communities can be greatly reduced. The rates by states in the birth registration area for 1921 are shown by Figure 12; and the same data for certain cities by Figure 13.²⁸ These rates are subject to errors due to incomplete reports of births. It will be observed that Berkeley, Portland, and other Pacific Coast cities have a better record than cities in other parts of the country. It is difficult fully to explain the differences; they may be due partly to climate and to racial and occupational variations among the parents.

*Maternal Mortality.**—Although most encouraging results have been achieved in reducing the infant death rate in the United States, the general trend in the maternal mortality rate during recent years does not appear to have been downward. (See page 30.) In 1921 it was 6.8, considerably less than it has been since 1917, but higher than it was in 1915. To every 1,000 live births in 1921, seven mothers died.²⁹ The relatively high rates for 1918 to 1920 were largely due, doubtless, to the epidemic of influenza prevailing during those years which was fatal to many pregnant women.³⁰

* See Appendix 1 (page 439) for maternal mortality by states.

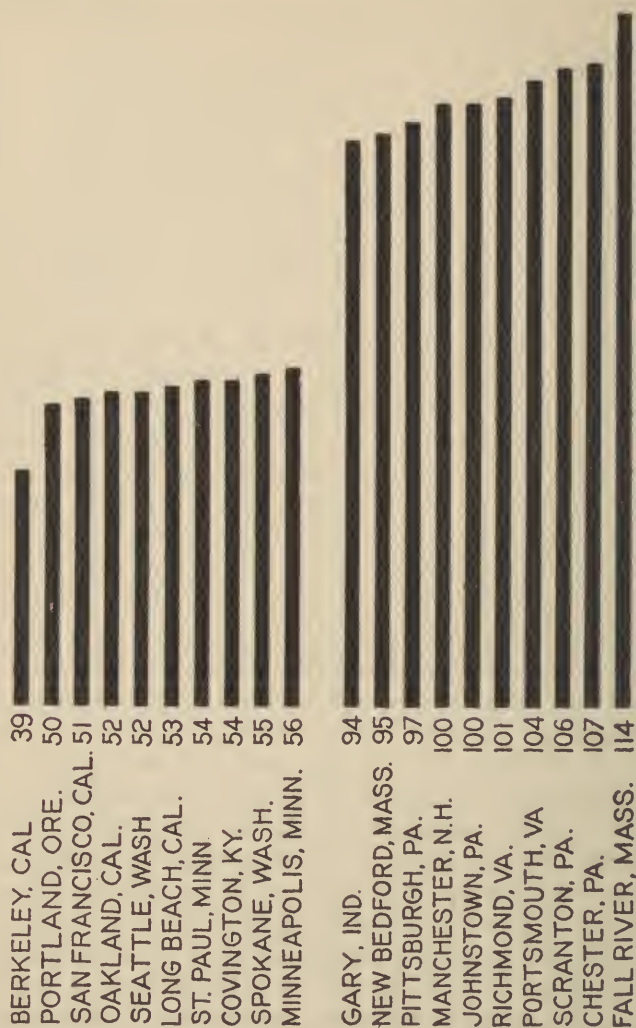


FIG. 13.—INFANT MORTALITY RATES PER 1,000 LIVE BIRTHS DURING 1921 IN 10 CITIES WITH THE LOWEST RATES AND 10 CITIES WITH THE HIGHEST RATES—CITIES OF 50,000 OR MORE POPULATION IN 1920—BIRTH REGISTRATION AREA.

Furthermore, the maternal mortality rate in the United States is higher than in most European countries; at least it was a few years ago. The following table ³¹ gives the rates per 1,000 births by countries:

Italy (1915)	2.2
Norway (1915)	2.7
Sweden (1915)	2.9
The Netherlands (1919).....	3.4
Prussia (1914)	3.5
Japan (1916)	3.5
Finland (1916)	3.6
Hungary (1915)	4.0
England and Wales (1919).....	4.4
France (1913)	4.6
Australia (1918)	4.7
Ireland (1918)	4.8
New Zealand (1919).....	5.1
Spain (1915)	5.2
Switzerland (1915)	5.5
Scotland (1919)	6.2
United States (Birth Registration Area, 1921).....	6.8
United States (Birth Registration Area, 1919).....	7.4

The failure of the United States to reduce the maternal mortality rate is largely a result of low-grade obstetrical work, including a lack of progress in prenatal care.³² This situation, it may be supposed, is due partially to the considerable proportion of births in the United States attended by midwives. As will be seen later,* there are, according to the 1920 census, nearly 5,000 midwives in the United States. Michael Davis believes that about 30 per cent of all confinements are attended by them. The best type of midwife is the woman who has received her training abroad. There are also many casual midwives without training, except that gained by experience with their own and their neighbors' children. Only one training school exists in this country under public control—the Bellevue

* See page 384.

Hospital School of Midwifery. On the other hand, an inquiry³³ conducted by J. Whitridge Williams among teachers of obstetrics in the medical schools of the country indicates that general practitioners lose from infection at childbirth as many patients proportionately and possibly more than do midwives. Evidently, there is a need for general improvement in obstetric work.

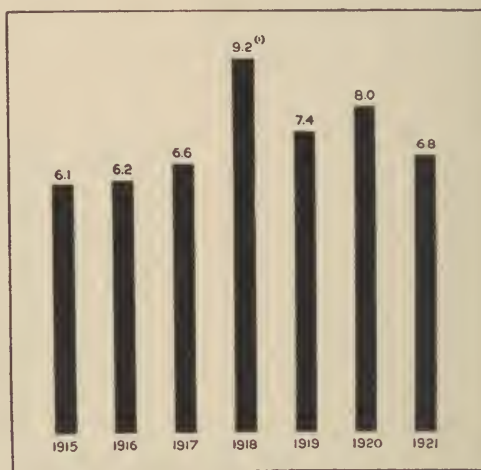


FIG. 14.—MATERNAL MORTALITY RATES, 1915-1921, IN UNITED STATES BIRTH REGISTRATION STATES.

¹ High rate in 1918 was probably due to influenza epidemic; puerperal septicemia showed no increase in this year.

Middle and Old Age Mortality.—As has already been pointed out, and as may be seen from the 1920 death rate curve (Figure 8) the business of living is fairly safe in childhood; but life becomes increasingly hazardous after the age of fifteen is passed. Roughly analyzing the curve, it is seen that the rate at twenty-five is about twice that of childhood; at thirty-one, three times the rate at childhood; at thirty-eight, four times; and at forty-four, five times. When

the period of fifty-five to sixty-four is reached, 24 out of every thousand die each year.

The chief cause of death during middle life, when men and women are most useful to society, is tuberculosis. About 30 per cent of all deaths between the ages of fifteen and sixty are due to pulmonary tuberculosis alone.³⁴ Pneumonia, cancer, and diseases of the heart and kidneys also, as has been noted, cause a considerable proportion of deaths in middle life; and various infectious diseases, especially when they are epidemic, are responsible for many deaths at this period. Tuberculosis, however, stands head and shoulders above all the others in its deadliness. As will be seen later, most cases are preventable.

In old age, apoplexy, diseases of the heart and kidneys, cancer, and pneumonia are among the most frequent causes of death. Pneumonia as a disease of advanced age should perhaps not be regarded as man's enemy. In fact, as Osler suggests, it "may be called the friend of the aged. Taken off by it in an acute, short, not often painful illness, the old escape those 'cold gradations of decay' that make the last stage of all so distressing."³⁵ The practicable present problem in the prevention of pneumonia perhaps may be stated as that of postponing it until old age.

The death rates due to cancer, diabetes, and diseases of the heart and kidneys have increased, as will be seen later, while the death rates due to tuberculosis, typhoid fever, and the diseases of childhood have decreased. Apparently there is some causal relation. Partially because public health measures have reduced the death rates of the latter group of diseases and thus have brought about the prevention of deaths in early years, there have been a larger number of persons alive in later years to become victims of the first group of diseases.

Since the beginning of the public health movement in the United States, the mortality rate has been the chief index by which the health of the whole population, or groups within the country, has been judged. In the future, it will be a decreasingly satisfactory criterion. The death rate can be lowered and the average duration of life increased, particularly by reducing the number of infant deaths. The achievements of a few states suggest what can be done. But there is a point beyond which the average length of life is not likely to go. It is now approximately 56; should it reach 70 or 75 years, it will not increase much beyond that point, at least for a great many years. In other words, human beings will continue to die in old age; and while death always brings sorrow, after all one must die, and it does not make a great deal of difference what disease causes one's death, if it is not a painful and lingering illness. The death rate to-day, nevertheless, is higher than it ought to be, and as long as it is high among persons who have not reached old age it will be an important index.

Consideration will now be given to a somewhat more significant criterion of the nation's health.

CHAPTER III

SICKNESSES WHICH DISABLE

MORTALITY rates have been used extensively in the past as indices of health, chiefly because they have been the only reliable data available. But it would be quite possible for a community with relatively few deaths to have a large proportion of its population so disabled physically and mentally as to be not only useless to society, but a burden to others. Death rates in many respects are not so important as sickness rates. And while mortality statistics are inaccurate and must be improved, it is even more important to develop sources of reliable information regarding morbidity. In this outline particular attention will be given to sickness, and first to those illnesses which disable.

It is difficult to obtain from the morbidity reports of state boards of health an accurate idea of the amount and the kinds of sickness with which the people of the nation suffer. Only communicable diseases, with a few exceptions, are reported, and unfortunately not all physicians carefully observe the law requiring the reporting of such diseases. Nor do all cases come to the attention of physicians.

There are two ways, however, by which a fairly satisfactory picture may be obtained of the health of a community. First, a cross section investigation may be made; that is, several thousands of homes may be visited by investigators during a relatively short period of time, to record the number of persons sick at that one time and the diseases with which they are disabled. This sampling is obviously inadequate to the extent that it reveals the disease situation at

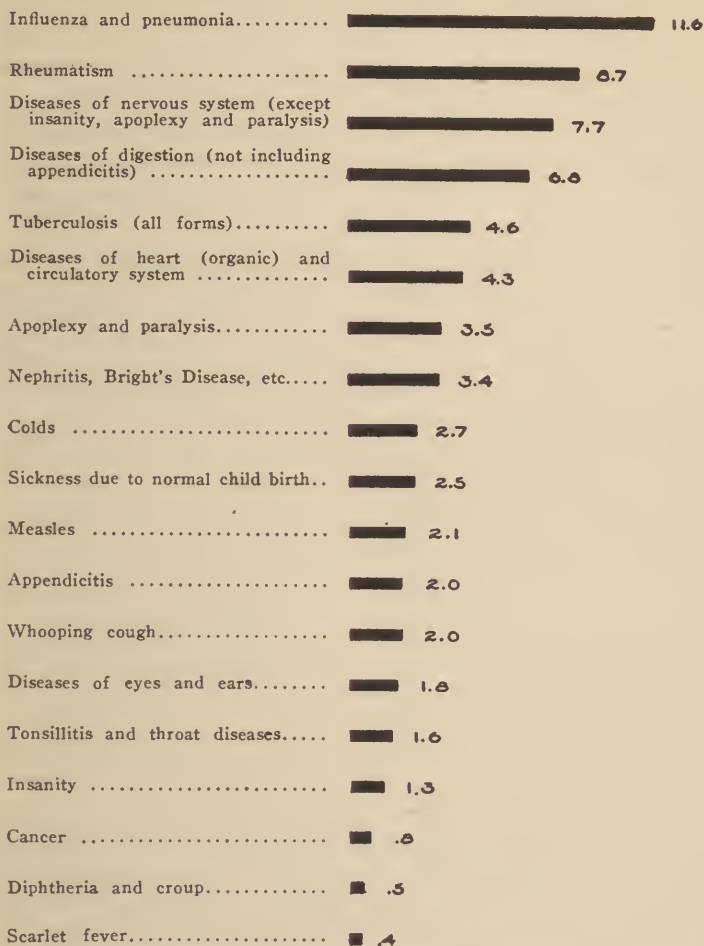
only one season during the year. Second, a record may be kept of the health of a particular group of persons in an industry or institution throughout an entire year.

Surveys Showing Sickness at a Given Time.—The Metropolitan Life Insurance Company has made a successful application of the first method. During the years 1915, 1916, and 1917, it sent representatives into numerous cities and towns of seven different states and obtained a health record of 571,757 persons.¹ Some of the surveys were at seasons of the year favorable to good health, and other surveys at less healthful seasons. The company believes that, taken as a whole, these studies reveal a degree of sickness typical of most industrial communities of the United States throughout the year.

Approximately two per cent of the entire number of white persons canvassed were found to be so sick as to be unable to work. Applied to the entire population this means that there are in the United States to-day, and every day of the year, about two million persons disabled on account of sickness.

Specifically, what are the diseases which each day disable over two millions of our American fellow citizens and entail a proportionate loss of time in industry? The Metropolitan Life Insurance Company study shows that the most serious disabling diseases among the groups visited were influenza and pneumonia, rheumatism, diseases of the nervous system (not including insanity, apoplexy, and paralysis), diseases of digestion, tuberculosis, and diseases of the heart (organic) and the circulatory system. The graph on the opposite page (Figure 15)* lists these and other diseases in the order of their frequency, with figures showing the per-

* Certain diseases, in the graph and in the lists on p. 37 are brought together so as to provide a more nearly accurate picture of the morbidity of these groups of persons. In the table on p. 44 the diseases are listed separately as in the original reports, so that all five lists may consist of comparable data.



Omitted causes (including external violence, miscellaneous respiratory diseases, and a large number of others) amount to 32 per cent.

FIG. 15.—PERCENTAGE OF ALL DISABLING SICKNESSES DUE TO SPECIFIC CAUSES. BASED ON INVESTIGATION AMONG 571,757 PERSONS IN SEVEN SURVEYS CONDUCTED BY THE METROPOLITAN LIFE INSURANCE COMPANY.

centage of all disabling diseases charged to each one on the list.²

A visit to any considerable number of hospitals in a large city will help one to realize the amount of sickness at all times. There are many thousands of these institutions throughout the country, with a total of over 800,000 beds. In the city of Philadelphia, for example, there are (according to a 1920 report) 76 hospitals.³

Records of Health Throughout the Year.—The United States Public Health Service, with the help of the medical research department of a large corporation in the Middle West, found that among 1,282 office workers for the year ending January 31, 1921, the average annual loss of time on account of sickness per person employed was 8.15 days, and that during the year there were, on the average, two cases of sickness per person.⁴

In a rubber manufacturing company employing 18,000 persons for the year ending October 31, 1920, records were kept of sicknesses among factory workers causing a disability of one day or longer.⁵ The results were similar to those for the office workers. There were virtually two cases of disabling sickness per person per year among these factory workers; and the average loss of time per person per year was among the women 13.8 days and among the men 9.3 days.

When the results of these studies of records kept throughout the year are compared with the figures made available by the cross section method employed by the Metropolitan Life Insurance Company, a striking similarity is found. The company's computations based on their canvass of a half-million white persons fifteen years old and over revealed an average loss per person per year of 8.4 days.⁶

Earlier and less thorough studies give similar results. The United States Commission on Industrial Relations (1913-15) stated that the probable average loss to American wage earners on account of sickness was about nine days

per year.⁷ The committee on industrial waste of the Federated American Engineering Societies appointed by Herbert Hoover in January, 1921, reached the conclusion through its study that, of the 42,000,000 persons gainfully employed at that time, there was probably an average loss of more than eight days per person per year on account of illness disabilities.⁸

In view of the uniformity in the results of a considerable number of studies, therefore, it may safely be said that the people of the United States are sick, seriously enough to be disabled, on an average of about one week per person per year. Since this average includes many thousands of persons so healthy that they are almost never ill, it must also include a considerable number who are sick probably several weeks per year, and a small per cent—thousands of individuals, however—who are permanent invalids.

Among the 18,000 factory workers, the most frequent causes of disability were, in the order of their frequency:

- | | |
|--|--|
| 1. Diseases of digestion * | 6. Rheumatism |
| 2. Influenza and pneumonia | 7. Diseases of the eye and ear |
| 3. Diseases of the throat | 8. Diseases of the heart (organic)
and circulatory system |
| 4. Headache | 9. Measles |
| 5. Diseases of the skin
(boils, etc.) | 10. Syphilis and gonorrhea |

Among the 1282 office workers the diseases and ailments which caused the greatest loss of time were influenza and pneumonia, fatigue, tuberculosis, diseases of the throat, diseases of digestion, colds, disorders of the genito-urinary system (chiefly dysmenorrhea), scarlet fever, headache, and whooping cough.*

Sicknesses of Childhood.—Because sickness among children proves fatal in a considerable proportion of cases and because it results often in permanent injury, it has seemed especially desirable to investigate its causes.

* See footnote, p. 34.

There may be obtained from infant mortality data a fairly adequate picture of infant morbidity. Apparently the chief causes of sickness are acute gastro-intestinal diseases, pneumonia, diphtheria, tuberculosis and, to some extent, the common children's diseases—measles, scarlet fever, chicken pox, whooping cough, and mumps. Eczema, obviously, should also be included.

For children of school age, an investigation made in Missouri during the school year 1919-20 among 6,130 children in 13 different localities gives interesting results. A total of 37,368 days lost on account of sickness was recorded.⁹

One of the chief causes was influenza, but it should be left out of account, perhaps, because the study was made during the second year of the recent epidemic. Omitting influenza, the following table shows the proportion of sick days due to certain causes:

	<i>Percent- age</i>		<i>Percent- age</i>
Colds	32.5	Toothache	2.3
Measles	23.5	Pneumonia	2.3
Mumps	12.8	Diphtheria .....	.8
Scarlet fever	7.5	Smallpox .....	.5
Whooping cough	4.4	Other diseases	7.2
Chicken pox	3.6		—
Tonsillitis	2.6	Total	100.0

Official Morbidity Statistics.—In attempting to obtain a complete picture of disabling sicknesses, it is desirable to consider the morbidity reports, inadequate though they may be, of the state departments of health. Although they do not satisfactorily show the relative seriousness of the reportable or communicable diseases, they often reveal sudden rises in morbidity and warn health officers of the approach of an epidemic. The statistics of the New York State Department of Health are perhaps more illuminating than

those from other health departments because they apply to a population of over 10,000,000 persons. For 1921, the communicable diseases reported most frequently to the department were in the order of their frequency: measles, diphtheria, scarlet fever, pneumonia, syphilis, tuberculosis, chicken pox, whooping cough, mumps, and gonorrhea.* ¹⁰

The reported prevalence of syphilis and gonorrhea will be a surprise to many; only recently have the laws of the various states required the reporting of these diseases. It will be observed that in New York more cases of syphilis were reported than tuberculosis, also more cases of gonorrhea than of influenza and typhoid together. Considering the serious effects of syphilis and gonorrhea on the individual and other members of the family, their prevalence ought to be a matter of grave concern to all interested in public health.

The morbidity reports of state and city departments of health, however, do not always represent accurately the relative incidence of reportable diseases. In many cases, one or more diseases are less carefully reported than others; sometimes the reports reflect the interest of the department in some particular communicable disease program.

Sickness According to Ages.—Few data are available showing the ages at which sickness is most prevalent. It was found that, among the half-million persons canvassed by the Metropolitan Life Insurance Company, there was a low sickness rate for those under the age of fifteen of 10 per 1,000 (which means that out of every 1,000 persons there were only 10 cases of disabling sickness at the time of the investigation); that the rate remained low between the ages of fifteen to twenty-four among males, but that it rose slightly among females. From this point on, the sickness rate for both sexes rapidly increased until, for the age period of sixty-five and over, there were on an average

* Appendix 5 (page 449) gives a complete list of diseases reported to this department for the year 1922.

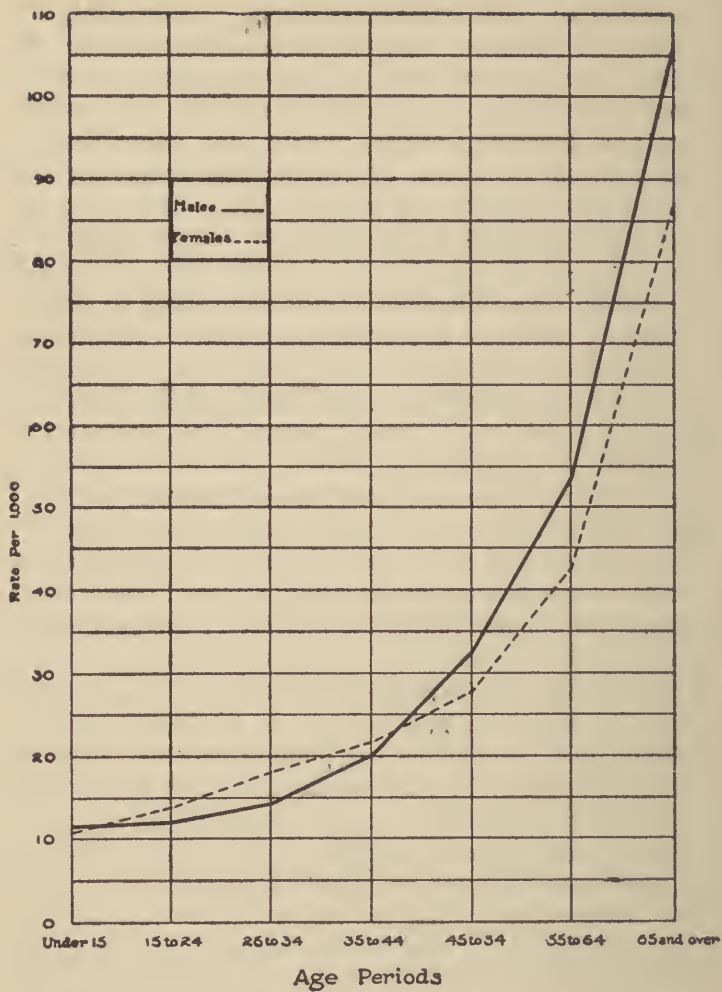


FIG. 16.—CASES OF SICKNESS PER 1,000 WHITE PERSONS BY SEX AND BY AGE PERIOD, AMONG 579,197 PERSONS VISITED BY AGENTS OF THE METROPOLITAN LIFE INSURANCE COMPANY.

about 85 cases of sickness per year among females and 105 among males out of every 1,000 persons living in those ages. The diagram on the opposite page (Figure 16) gives the rates by age periods.¹¹

Morbidity statistics among adults show that the frequency of disease increases with age. Not so, however,

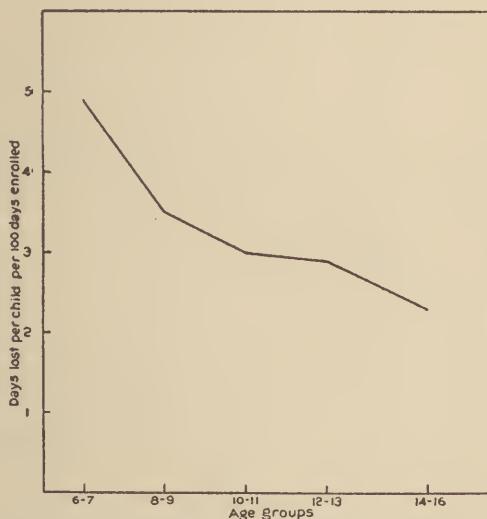


FIG. 17.—DAYS LOST FROM SCHOOL PER CHILD PER 100 DAYS ENROLLED, BY AGES (1920-1921), FOR ABSENCE DUE TO SICKNESS. BASED ON THE RECORDS OF 3,786 CHILDREN IN MISSOURI. SURVEY BY THE U. S. PUBLIC HEALTH SERVICE.

among children. After children escape the deadly diseases of infancy and approach school age, there is a constantly decreasing amount of sickness until the age of fifteen is reached. The diagram above (Figure 17) shows that, among 3,786 children in Missouri during 1920-21, those six and seven years of age lost on account of sickness for every 100 days enrolled 4.9 days, and that this loss constantly decreased as older children were reached until at fourteen to

sixteen years of age we find an average loss per 100 days enrolled of only 2.3 days.¹²

Sickness at Various Seasons of the Year.—During what months are people most frequently sick? The student of public health must have accurate information on this point. Weather influences the clothing we wear, the food we eat, and the amount of fresh air and exercise we get.

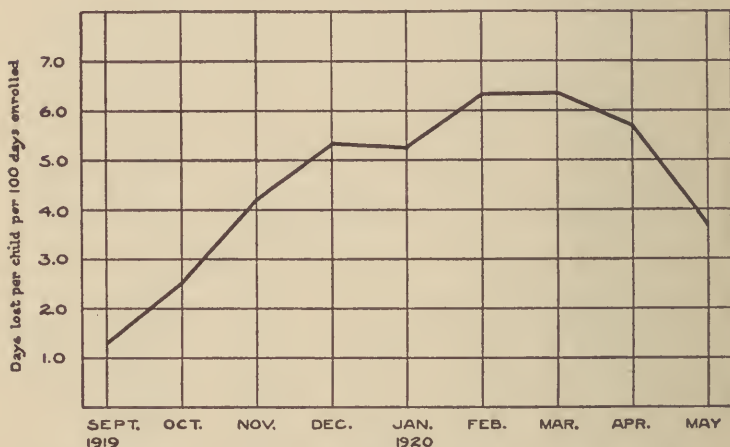


FIG. 18.—ABSENCE IN DIFFERENT MONTHS DUE TO SICKNESS (NOT INCLUDING INFLUENZA) AMONG SCHOOL CHILDREN. CURVE SHOWS DAYS LOST FROM SCHOOL PER CHILD PER 100 DAYS ENROLLED (1919-1920). BASED ON THE RECORDS OF 6,130 SCHOOL CHILDREN IN MISSOURI. SURVEY BY UNITED STATES PUBLIC HEALTH SERVICE.

The available figures support the answer most persons would probably give, viz., that diseases are more prevalent in the winter than in the summer. The diagram (Figure 18) shows the rate of absence of children from school due to disease (omitting influenza) during the various months. While in September, an average of only 1.3 days per child was lost for each 100 days enrolled, the frequency of absences rose rapidly until in March, when sickness was most

prevalent, there was an average loss of 6.3 days per child per 100 days enrolled. During April and May, the prevalence of sickness, it will be observed, suddenly declined.¹³ A study was conducted by the Public Health Service among approximately 55,000 industrial workers, over the entire year of 1920 and the first six months of 1921, of sicknesses lasting one week or longer. Such disabilities were most frequent in January of each year, and least frequent from May to November. The fewest illnesses were reported in September.¹⁴

Conclusions from Five Investigations.—In the preceding pages, five distinct sets of data have been presented, in order to reveal not only the amount of disabling sickness, but the kinds of diseases which incapacitate. The figures, from one point of view, are not comparable, because the investigations were made under diverse conditions by persons with varying degrees of training, and in no two instances were the same directions given. No combination of results, therefore, can be made, and no statistical data can be compiled therefrom. On the other hand, these investigations are among the most illuminating which have yet been made, and it may be legitimate to compare results for the purpose of obtaining a general picture of the diseases which appear to be the most serious from the standpoint of incapacitating human beings for their usual occupations. The table on the next page gives the ten most serious disabling diseases listed in each study according to their prevalence or frequency or according to days absent from work or school on the part of the persons affected. The diseases printed in black face type are those which occur three times or more; those printed in italics occur two times.

These are surely among the diseases upon which health agencies should direct their chief energies, particularly if, in the future, sanitarians are to place more emphasis on the reduction of morbidity. The two lists follow on page 45:

THE MOST SERIOUS DISABLING DISEASES

LISTED IN ORDER OF THEIR PREVALENCE OR FREQUENCY OR ACCORDING TO DAYS ABSENT FROM WORK OR SCHOOL
ON THE PART OF PERSONS AFFECTED

Diseases in black-face type are mentioned in three or more lists; those in italics in two lists.

Study of 637,938 persons by Metropolitan Life Insurance Company in order of prevalence	Study of 18,000 factory workers by U. S. Public Health Service in order of frequency	Study of 1,282 office workers by U. S. Public Health Service according to number of 8-hour days lost	Study of 6,130 school children by U. S. Public Health Service according to number of days absent	Report of New York State Department of Health. Report-able diseases for 1921 according to frequency
<ol style="list-style-type: none"> 1. Rheumatism 2. Influenza 3. Pneumonia 4. Tuberculosis 5. Organic heart diseases 6. Colds 7. Measles 8. Appendicitis 9. Whooping cough 10. Tonsillitis 	<ol style="list-style-type: none"> 1. Colds 2. Influenza 3. Tonsillitis 4. Headache 5. Bronchitis 6. Constipation 7. Rheumatism 8. Boils 9. Diarrhea enteritis 10. Myalgia 	<ol style="list-style-type: none"> 1. Influenza 2. Fatigue 3. Tuberculosis 4. Colds 5. Tonsillitis 6. Dysmenorrhea 7. Indigestion 8. Scarlet fever 9. Headache 10. Whooping cough 	<ol style="list-style-type: none"> 1. Colds 2. Measles 3. Influenza 4. Mumps 5. Scarlet fever 6. Whooping cough 7. Chicken pox 8. Tonsillitis 9. Toothache 10. Pneumonia 	<ol style="list-style-type: none"> 1. Measles 2. Diphtheria 3. Scarlet fever 4. Pneumonia 5. Syphilis 6. Tuberculosis 7. Chicken pox 8. Whooping cough 9. Mumps 10. Gonorrhea

Mentioned three times

Influenza
Tuberculosis
Colds
Measles
Scarlet fever
Whooping cough
Pneumonia

Mentioned two times

Rheumatism
Headache
Mumps
Chicken pox

The seriousness of influenza needs little comment. It is of utmost importance that research be pressed, in the hope that measures may be taken to prevent another epidemic such as devastated the country in 1918 and 1919. Tuberculosis is receiving attention more nearly adequate to its importance than are most of the other disabling diseases. But do not colds and headache demand the attention of health agencies? They do, if reliance is to be placed on the results of these five separate and distinct studies of disabling sicknesses, and if the chief interest of sanitarians is to prevent morbidity. Headache occupies fourth place among factory workers and ninth place among the 13,000 office workers. Even when they do not incapacitate, these colds and headaches cause much suffering and inefficiency. Rheumatism was found to be the most serious disabling disease among the 600,000 persons examined by the Metropolitan Life Insurance Company; it takes seventh place in the list of diseases among 18,000 factory workers. The frequency with which syphilis and gonorrhea are mentioned in the report of the New York State Department of Health is particularly significant. Many persons, not understanding the seriousness of these two diseases, do not remain away from work during the period of treatment. Were their danger fully understood and proper treatment obtained, these diseases would likely have appeared in the first three columns of the table on page 44.

Among the important disabling diseases whose prevalence is not fully revealed by the five investigations are cancer,

diseases of the heart and kidneys, diabetes, and possibly diphtheria.

Possibilities of Prevention.—Can these various diseases, responsible for most of our disabling illnesses, be prevented? If so, to what extent? Only the roughest estimates are possible, so unsatisfactory as to be almost guesses. Yet it may not be out of order to suggest that of the first group of diseases mentioned above (those occurring three times or more in the table), possibly 50 to 75 per cent of cases may be prevented in the near future if systematic effort is applied to the task. Surely many colds could be avoided, were people sufficiently careful and wise in regard to personal hygiene. Their prevention would cut down very greatly the tuberculosis, influenza, and pneumonia rates. Similarly might tonsillitis be avoided. Improved health work in schools would considerably reduce the prevalence of the children's diseases.

Of the diseases occurring two times in the table, many headaches might be prevented through hygienic living, and the elimination of focal infections would prevent much rheumatism.

Thus one may be quite justified in making the very general statement (which, it should be remembered, is little more than a guess) that, by the application of established hygienic measures, probably one half of the disabling illnesses which now afflict the people of the United States each year might be prevented.

These preventable diseases cause incalculable suffering and vast economic waste. Many of them lead to even more serious illnesses later, and some of them result in sudden death, often in the premature cutting off of life. The facts, therefore, appear to demand upon this group of diseases a united and vigorous attack.

CHAPTER IV

DEFECTS AND MINOR AILMENTS

To lower the death rate and to prevent those illnesses which disable the people of the United States on an average of eight or more days per year have been the chief aims of boards of health and other health agencies. But what matters most, in the minds of an increasing number of sanitarians, is the state of the people's health during the 357 days when they are up and about, endeavoring to do their work efficiently and to get satisfaction and joy out of work and recreation. Defects and ailments which are most serious from this point of view are those which keep men on a low plane of vitality and rob them of health, efficiency and the freer, more buoyant life.

Here, then, will be considered those conditions which do not for the most part incapacitate men and women for their daily occupations. They include those defects and diseases disclosed by the examinations of various large groups of the population, and other common manifestations of ill health which even such examinations do not reveal. They are important not only because they detract from efficiency and the joy of living, but also because sometimes they lead to more serious diseases. Often, in fact, such ailments are signs of the beginnings of disease, which, if properly interpreted, should aid in the prevention of disability and early death.

Before the war there were little reliable data to show what kind of a nation, physically, the United States is. The necessity of recruiting an army of physically fit men, how-

ever, forced the government to take account of stock. Furthermore, the gradually increasing interest in health has resulted in the examination of various groups in the population. Now there are available data which give a fairly reliable picture of the physical and mental condition of the 98 per cent of people who are not sick abed or confined to their homes, but who are around at their various tasks, presumably fit.



FIG. 19.—PROPORTION OF DRAFTED MEN CLASSIFIED AS DEFECTIVE AND PROPORTION REJECTED, 1917-1918.

The Examination of Drafted Men.—Following the declaration of war against Germany in 1917, about three and one-half million men between the ages of eighteen and thirty * were examined to determine whether they were fit for military service. The results disclosed facts regarding their physical and mental condition which were astonishing

* The Selective Service Law required the registration only of those men 21 to 30 years of age (until the registration of Sept. 12, 1918). The large majority of those examined, therefore, were probably 21 years of age and over.

to a great many thoughtful persons. They must not, however, be used indiscriminately. It must be borne in mind that many classified as defective were so listed on account of minor defects, such as insufficient height and weight and defects of the fingers and toes, which had in no way interfered with their effectiveness in most of the ordinary tasks of life. On the other hand, a considerable proportion of men were taken into the army who were suffering from abnormalities and diseases which required immediate hospital treatment to make them fit even to begin military training.*

Of the total number examined an average of 47 out of every 100 (Figure 19) were found to have some defect or disease¹; 21 out of every 100 were rejected and sent home.²

For what ailments were such a surprisingly large proportion classified as defective? These men were at the prime of life. They had passed through the period of children's ailments and had not reached the stage of life at which the debilitating diseases of old age make their attack; one would have said that they were in better physical condition than women of the same age group. Although many of the defects were not disabilities, yet 47 per cent of the total number were judged from the Army point of view to be in some way "defective." The table³ on page 50 shows the percentage of all rejections due to each of 13 major causes.

A study of the table shows that many of the conditions enumerated could have been prevented or corrected in childhood. The conservative sanitarian, considering the state of preventive medicine and therapeutics during the twenty or thirty years immediately preceding the war, might safely say that there could probably have been corrected or prevented at least half the cases of weak feet, most of the hernia cases, half of the defects of the eyes and ears, most of the

* See Appendix 1 (page 439) for data on the results of draft examinations by states.

	<i>Per Cent</i>
Weak feet	12
Defective or injured fingers and toes.....	5
Other mechanical defects.....	18
Hernia	4
Defects of the sense organs.....	12
Syphilis, gonorrhea and chancroid.....	5.8
Tuberculosis	5.4
Diseases of the heart and arteries.....	10
Defects of development and metabolic processes.....	10
Nervous and mental disorders.....	6
Defects of the nose and throat.....	5
Defects of the skin and teeth.....	3
Respiratory diseases (not including tuberculosis).....	1
Other defects and diseases.....	2.8
Total	<hr/> 100.0

syphilis and gonorrhea, most of the tuberculosis, many of the disorders of the heart and arteries, half of the nervous and mental disorders, half of the nose and throat conditions and most of the defects of the skin and teeth. Of all defects and diseases, it would probably be safe to say that, even with the limited knowledge and skill of the years before the war, at least one third could have been prevented or remedied. They were largely ignored, not primarily, perhaps, because of lack of skill and knowledge among physicians, but because there had not developed during those years a conscious, active, organized interest in health and physical fitness.

With the present knowledge and skill in orthopedics and in the prevention and treatment of tuberculosis and venereal diseases, and with the progress made in other lines of preventive medicine, it would be conservative to say that one half to two thirds of the disorders and abnormalities which are now afflicting the rising generation, or which are now developing, may be corrected or prevented—provided the present widespread interest in health and physical fitness becomes articulate and effective.

The significance of some of the figures in the foregoing table may be briefly considered. If they are applicable to-day, they mean that out of every 100 young men in school, shop and factory, five or six have active tuberculosis and an equal number have a venereal disease. A large proportion of those with tuberculosis will gradually become weaker and finally die. Many of these thousands of young men who constitute the 5 per cent with a venereal disease will later pass on their infection to innocent wives or children.

The figures also mean that almost half the young men of the country are suffering from various mechanical defects of the legs, arms, and their appendages and of other organs of the body. They mean, if they represent conditions to-day, that 5 out of every 100 have a disease or defect of the nose or throat that needs attention, that 10 per cent are suffering with some defect of the heart or arteries. In many instances, these young men are not conscious of their defects. We need to-day among our young men and among those of the rising generation, therefore, just such an examination as their somewhat older brothers received a few years ago.

Finally, if the figures of the table are applicable to-day, they mean that 6 young men out of every 100 are suffering from some nervous or mental disorder. Only recently have sanitarians begun to understand that relatively minor nervous and mental disturbances in youth may lead to the more serious nervous defects, to the mental diseases in later life, and to crime; also that prompt attention may prevent a large proportion of such developments. In a leading eastern university, 1,141 students were examined in 1920 for "nervous instability." It was found that 16.4 per cent had had one or more nervous or mental troubles, and that at the time of the examination 7 per cent had a nervous symptom of sufficient importance to record.⁴

The British Army similarly examined about two and one-

half million men between the ages of eighteen and forty-two, with results which astonished British statesmen.⁵ The committee of the Ministry of National Service stated in its report:

"War is a stern taskmaster with whom no compromise is possible. . . . It has forced us to face our man-power problem with the close intensity which only a struggle for national existence can evoke. It has compelled us to take stock of the health and physique of our manhood; this stock-taking has brought us face to face with ugly facts and—one hopes—awakened us from the half-hearted complacency with which in the past we have treated our most important asset—the health of the nation."

Examinations of the Life Extension Institute.—This organization promotes periodic medical examinations for the purpose of discovering and correcting defects and diseases which cause premature death. It has collected the reports of the examinations of approximately 225,000 persons. Although these examinations may be subject to mistakes of diagnosis, as is any medical examination, such mistakes, among so large a number, tend to balance one another; and the general picture presented is of great value. The thorough inspection of 5,000 persons applying at the main office of the institute for a physical examination showed a surprising degree of ill health and defectiveness. These persons, for the most part, did not consider themselves sick. They were up and around about their daily tasks; their interest was to discover hidden sources of danger.

Of the 5,000 individuals examined,⁶ none was found worthy to be grouped in Class 1—which included only those having no physical defects. (See Figure 20.)

Only one tenth of 1 per cent of the total were in sufficiently fit condition to justify their being placed in Class 2, composed of those having only "minor defects requiring observation or attention."

Sixteen per cent were put into Class 3, comprising those having "moderate defects requiring hygienic correction or minor medical, dental, or surgical attention."

Twenty-five per cent were placed in Class 4, those having "moderate defects requiring medical supervision as well as hygienic correction."

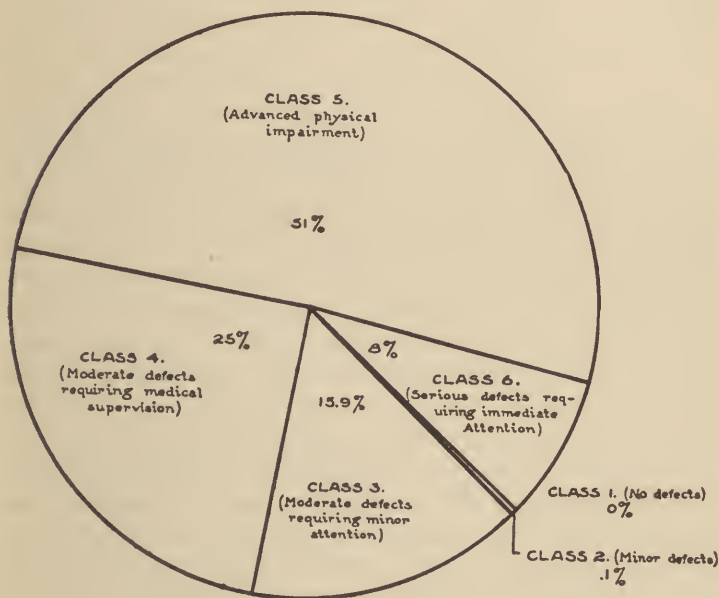


FIG. 20.—RESULTS OF THE EXAMINATIONS CONDUCTED BY THE LIFE EXTENSION INSTITUTE OF 5,000 PERSONS WHO, FOR THE MOST PART, DID NOT CONSIDER THEMSELVES SICK.

A majority, 51 per cent of the total, were grouped in Class 5 as having "advanced physical impairment requiring systematic medical or surgical attention."

Eight per cent were left for Class 6, composed of those having "serious physical defects requiring immediate surgical or medical attention."

The following table shows the distribution of the results of these examinations according to age groups:

	<i>Per Cent All Ages</i>	<i>Per Cent Under 25 Yrs. (8%)</i>	<i>Per Cent 26-45 Yrs. (54%)</i>	<i>Per Cent 46-65 Yrs. (34%)</i>	<i>Per Cent 66+ Yrs. (4%)</i>
Class 1	0	0	0	0	0
Class 2 . . . . .	.1	—	—	—	—
Class 3	16	27	18	11	..
Class 4	25	32	27	22	..
Class 5	51	37	50	56	61
Class 6	8	4	5	11	..

It may or may not be considered a serious fact that of 5,000 persons applying for a physical examination, there was not one found without physical defect; but that one half of those in the twenty-six to forty-five year old group (composed of persons who ought to be in their prime) should be found to have advanced physical impairment requiring systematic medical and surgical attention reveals a state of affairs which cannot be considered lightly. It is true that the 5,000 persons examined comprise a selected group—those perhaps who had had some warning that their physical condition was not satisfactory. Yet they were not persons who, for the most part, had been receiving medical attention; they were almost entirely those who would have gone about their business without medical care had their attention not been brought to the availability of the examinations conducted by the Life Extension Institute.

The Life Extension Institute has studied the weight and mortality records of over 700,000 persons, and has discovered that excessive weight constitutes a definite hazard. The Institute's figures show convincingly that as the weight for height and age increases, particularly among persons over forty years of age, the death rate also rises. Among persons forty-five to forty-nine years of age, the death rate of those 90 pounds over the average weight for height and age was more than twice the death rate of all insured persons of that age group.⁷

The Metropolitan Life Insurance Company provided for a series of examinations of over 17,000 policy holders, and the detailed results (see Appendix 6) reveal an extraordinarily large number of serious impairments, particularly when it is considered that the persons examined were presumably in fair health, able to be about and to do their daily work.⁸

Defects Among Industrial Workers.—Numerous studies of small groups of industrial workers are available, showing that a large proportion of workers have one or more defects which seriously limit their efficiency. For instance, among 800 bakers examined in New York City for admission to the army and navy, 57 per cent had some impairment or disease. Of 800 tailors, examinations showed that nearly 63 per cent were defective or diseased.⁹

There were examined under the supervision of the United States Public Health Service during 1922, 985 employees of the Post Office Department. The results were tabulated according to the classification used by the Life Extension Institute.¹⁰ Here again a surprising proportion of men with serious defects were discovered:

Only one half of 1 per cent had no physical defects.

Approximately 1 per cent had minor impairments requiring observation. These included flat feet, defective hearing and vision, and skin eruptions.

Over 26 per cent revealed moderate defects requiring hygienic correction or minor medical, surgical, or dental attention. Among these were enlarged or diseased tonsils, varicocele, decayed teeth, constipation, mild arteriosclerosis, hemorrhoids, and enlarged glands in the neck.

About 34 per cent were found to have moderate impairments requiring medical supervision as well as hygienic correction. They included nasal obstructions, defective teeth, enlarged inguinal rings, marked arteriosclerosis, and impaired hearing.

Approximately 24 per cent showed advanced physical

defects requiring systematic medical or surgical attention, including hernia, high pulse with complications, marked underweight with symptoms.

More than 14 per cent showed serious physical defects requiring immediate medical or surgical attention. These consisted of cases of excessive overweight, aortitis, aortic murmur, syphilis, tuberculosis, double hernia, and diabetes.

These workers, it should be remembered, did not consider that they were incapacitated for work. Obviously, however, their condition in many instances was causing a high degree of inefficiency, with an annual loss amounting to a large sum of money.

Examination of Children.—Since a large proportion of the imperfections and disorders revealed by the examination of large groups of adults may be prevented or remedied in childhood, it would be interesting to have reliable facts regarding the physical condition of children. Sufficient exact data are not yet available, but, it is hoped, may be later.

In 1918, however, Thomas D. Wood, chairman of the Joint Committee on Health Problems in Education of the National Education Association and the American Medical Association, submitted the following estimates regarding the physical and mental condition of the school children of the United States: ¹¹

At least one per cent—200,000 of the 22,000,000 school children in the United States—are mentally defective.

Over one per cent—250,000, at least, of the children—are handicapped by organic heart disease.

At least five per cent—1,000,000 children—have now, or have had tuberculosis, a danger often to others as well as to themselves.

Five per cent—1,000,000 of them—have defective hearing, which unrecognized, gives many the undeserved reputation of being mentally defective.

Twenty-five per cent—5,000,000 of these school children—have defective eyes. All but a small percentage of these can be corrected, and yet a majority of them have received no attention.

Fifteen to twenty-five per cent—3,000,000 to 5,000,000 of them—are suffering from malnutrition, and poverty is not the most important cause of this serious barrier to healthy development.

From fifteen to twenty-five per cent—3,000,000 to 5,000,000—have adenoids, diseased tonsils, or other glandular defects.

From ten to twenty per cent—2,000,000 to 4,000,000—have weak foot arches, weak spines, or other joint defects.

From fifty to seventy-five per cent—11,000,000 to 16,000,000 of our school children—have defective teeth, and all defective teeth are more or less injurious to health. Some of these defective teeth are deadly menaces to their owners.

Seventy-five per cent—16,000,000 of the school children of the United States—have physical defects which are potentially or actually detrimental to health. Most of these defects are remediable.

In 1923, Doctor Wood wrote that he believed these figures were still essentially accurate for the country at large, although he supposed that the percentages would be considerably lower in a few of the cities where rather intensive programs of health care have been undertaken during recent years.¹²

In 1919, physical examinations were given to 17,154 school children in ten cities and counties of Missouri.¹³ The number of children examined and the conditions of the study are such as to make the results significant. Of the total number of children examined, it was found that approximately 54 per cent had decayed teeth, that over 38 per cent had enlarged tonsils and that almost one fourth (23.6 per cent) were mouth breathers. Nearly 16 per cent had defective vision and over 11 per cent, adenoids. The graph on the following page (Figure 21) shows the percentages of these and other impairments.

It would be interesting to compare these results with the results of the examinations of drafted men, to see what defects revealed by the latter examinations are to be found among the children. This would be difficult, because the examinations were not equally thorough. Evidently, how-

ever, a very large proportion of the abnormalities and imperfections among the Missouri school children are such as to be easily and promptly remedied. If these and similar defects among all the children of the country to-day were

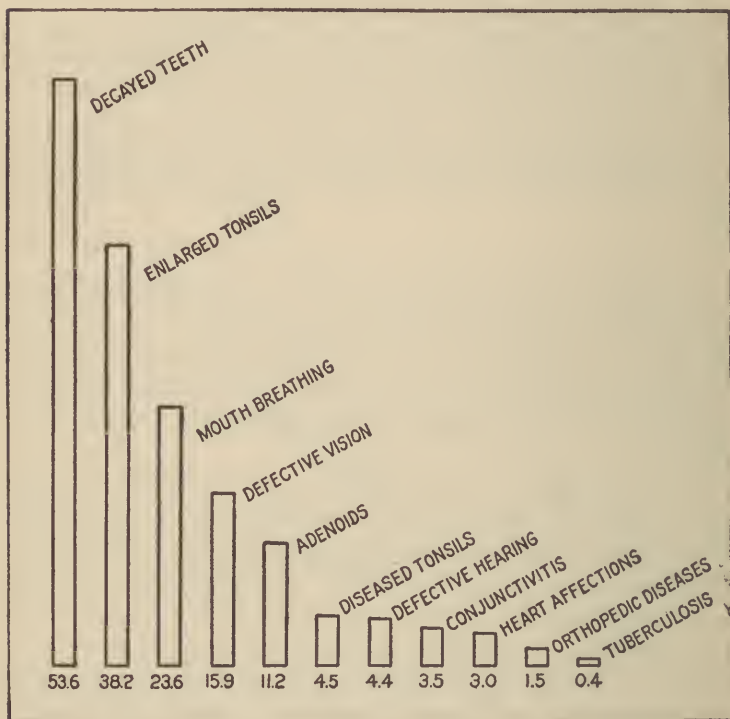


FIG. 21.—PERCENTAGE OF SCHOOL CHILDREN WITH CERTAIN DEFECTS OR DISEASES, BASED ON SURVEY BY UNITED STATES PUBLIC HEALTH SERVICE OF 17,154 CHILDREN IN MISSOURI.

corrected, the nation would doubtless find, were it to select in twenty years from now another army, a far larger proportion fit for service than responded to the call in 1917, and 1918.

Among children of pre-school age, defects of teeth, tonsils, and breathing, also malnutrition, are more prevalent, according to a writer in *The Nation's Health*, than among school children. The examination of 1,061 prospective entrants into the schools of New York City showed that two thirds had physical defects.¹⁴ Of these, 25 per cent had defective teeth; approximately 26 per cent, hypertrophied tonsils; 23 per cent, defective nasal breathing; and 19 per cent were suffering from malnutrition.

There are probably 350,000 children in the country, according to careful estimates based on surveys in Massachusetts and in Cleveland and New York City, who are "handicapped by some limited or distorted use of muscles, joints, or skeletal members." Almost two thirds of these children, at least of those in New York City, were disabled before the age of fifteen. Rickets, bone tuberculosis, infantile paralysis, and accidents are among the causes; many could be cured, most of them helped. But even in New York City in 1920, one-half of all cripples, including adults, were receiving no treatment. Nearly half of the crippled adults were wholly or partially dependent.¹⁵

These various examinations reveal strikingly the seriousness of the physical condition of the people of the United States. They disclose a high proportion of disorders and defects, but for the most part they are conditions that might have been prevented.

Minor Ailments.—The revelations of the examinations of drafted men and other population groups may well lead one to suspect that disorders of a slightly less serious nature may be even more prevalent. Such ailments are often carefully guarded secrets, but their effects in lessened efficiency and decreased buoyancy may be seen by the careful observer. Adults who are unable to run a block, or apply themselves to continuous mental effort for a few hours without undue fatigue, look with awe upon the mountain climber and upon the intellectual feats of an Edison. Such

persons comprise a large proportion of the adult population; their attitude of admiration towards the citizen in prime condition suggests how far they are from physical fitness.

Among the 1,282 office workers whose records were studied by the United States Public Health Service, there were, during the calendar year under consideration, 640 eight-hour days lost from work and 1,393 calls at the company's dispensary on account of common colds alone. There were also 417 calls for constipation, 1,014 for headaches, and 253 for fatigue.¹⁶ Among the 6,130 school children of Missouri, out of 37,368 days lost on account of sickness, approximately 32 per cent were due to common colds and slightly over 2 per cent to toothache.¹⁷

The examination by the Life Extension Institute of 16,662 white male policy holders of the Metropolitan Life Insurance Company showed that the following proportions of persons were suffering from minor ailments: * ¹⁸

Chronic constipation	40 per cent
Frequent or severe headaches.....	15 per cent
Frequent colds	18 per cent †

These data are especially significant because of the large number of cases reported upon.

In the past, the chief aim of many physicians has been to cure their patients after they have been attacked by disease; the efforts of most health officers have been relatively negative—to prevent disease. The sanitarian of the future will emphasize the achievement of optimum health among the people—that state of body and mind which brings the freer and more buoyant life. When the proper emphasis is placed

* See Appendix 6 for complete list of physical impairments.

† More data on fatigue, colds, and constipation are given in Chapters VII and VIII, pages 132, 160, 162.

on the more positive point of view, then far more attention will be given to the minor ailments here enumerated. It has been stated by one writer that about nine tenths of all minor ailments¹⁹ may be removed by careful attention. It is likely that this estimate is based on too optimistic a point of view. Let it be assumed here that only two thirds of these minor ailments and defects may be eliminated. Even then, an incalculable amount of inefficiency and distress may be wiped out. With the removal of these various specific minor ailments, efficiency may be immeasurably increased; fewer mistakes, more work, and shorter hours will be possible; and, what is more important, buoyant health and the joy of living will be the heritage of a larger proportion of the people.

CHAPTER V

THE ECONOMIC COSTS OF DISEASE

THE intellectual energies of many of the nation's best citizens are being mobilized for warfare against disease, not primarily because disease costs money, but because, as has been seen, it kills little babies and cuts short the lives of men at their prime, because it keeps millions of citizens disabled and other millions in a state of depressed vitality, incapacitated for efficient labor and for joy in living. Nevertheless, it will be profitable to consider briefly the economic costs of disease. If the people of the nation come to an understanding of its costs in terms of money, it may be possible to obtain sums more nearly adequate than at present for its prevention. It is a fact, as some communities are beginning to learn, that "public health is purchasable."

Accurate estimates of the economic costs of disease cannot be made, but certain limited computations may be suggested which will give a general picture tentatively satisfactory. In attempting to draw this general picture, four items must be taken into consideration—first, the cost of serious illnesses necessitating the attention of physicians; second, the cost of decreased efficiency due to minor ailments; third, the cost of medicine; and fourth, the cost to society of premature deaths.

Cost of Disabling Ailments.—In considering the economic costs of those ailments requiring medical attention, the expense of physicians, nurses, and others may first be estimated; it may reasonably be assumed that the income of all such persons ultimately comes out of the pocket of the

sick man. There are approximately 140,000 physicians in the United States engaged in curative medicine.¹ Taking into account both the low income of less experienced physicians and the relatively higher income of skilled physicians and surgeons, it is probably reasonable to say that the physicians and surgeons of the nation have an average gross income of \$3,000 per annum—a total for all physicians of 420 millions of dollars. There are about 138,000 trained nurses, not including public health nurses.² Because there has been a scarcity of nurses, those available have been well paid; doubtless many receive more than \$1,500 per annum. But if that amount is taken as the average yearly income, the money paid to the trained nurses of the country aggregates 207 millions of dollars. Furthermore there are approximately 150,000 untrained nurses.³ Let their income be figured at the low annual average of \$500, and it is seen that the total expense for these persons is 75 millions. There are, in addition, a large number of stenographers in physicians' offices, orderlies, and other employees in hospitals, and other personnel engaged in medical work (not including employees of various health agencies)—an aggregate of at least 100,000⁴ who, it may safely be said, receive an annual income of approximately \$800, which gives a total for this item of 80 millions of dollars.

Next there is to be considered the expense of taking care of sick persons in hospitals, in addition to the cost of the physicians, nurses, and others. As has already been observed, there are many thousands of hospitals in the country, making available a total of 817,000 beds.⁵ Not including the cost of food (which should not be charged to illness) and the cost of physicians, nurses, orderlies, and other attendants (already included), and considering only such items as heat and light, wear and tear on equipment, rent or interest on investment, it would probably be conservative to say that hospital care throughout the country costs on an

average \$1 per day per bed, including days when beds are not in use. For an entire year of 365 days, then, the total expense for this item alone would be about 300 millions of dollars.

Finally, the loss of wages for those who are disabled by disease should be taken into account. There are approximately 40,000,000 wage earners sixteen years of age and over ⁶ in the country, who are disabled, as has previously been observed, on an average of 8 days per year. Assuming that their daily wage is only \$2.00 per day, the total loss in wages on account of sickness, it will readily be seen, is approximately 1,000 millions of dollars.

It must be remembered that the figures suggested above are the most general kind of estimates—in most cases, very low estimates. If in the future more accurate figures are available, it may be found that these estimates are in error to the extent of millions of dollars. Yet, for present purposes, such errors would be relatively small, because we are dealing with tremendously big items. It is surely safe to conclude, after adding the rough estimates above, that the cost of serious illnesses, not including medicine, is considerably over 1700 millions of dollars annually, and if this amount is even several millions of dollars in error, it is of no particular consequence. Accepting the tentative statement given in an earlier chapter,⁷ that 50 per cent of the more serious illnesses are preventable, then the conclusion perhaps may be drawn that about one half the expense caused thereby may be avoided, and that the people of the United States are losing considerably over 800 millions of dollars annually through preventable sickness.

Cost of Decreased Efficiency Due to Defects and Minor Ailments.—It was observed in the previous chapter ⁸ that 51 per cent of 5,000 persons applying to the Life Extension Institute for physical examination and 24 per cent of 985 Post Office employees in New York City and Chicago were found upon examination to have ad-

vanced physical impairments requiring systematic medical and surgical attention. It will also be remembered that 40 per cent of over 16,000 policy holders in the Metropolitan Life Insurance Company were upon examination found to be suffering from chronic constipation, and 18 per cent from frequent colds. Considering these facts, it would probably be conservative to estimate that there are at all times at least 20 per cent of the 40 million persons, sixteen years of age and over, gainfully employed in the United States, in a condition of ill health, doing their work in an inefficient manner.

What is the annual cost of such inefficiency? If it is assumed that the wage earners of the country make, on an average, \$750 per year, their total cost to industry per annum is something over 30 billions of dollars. The 20 per cent of wage earners (or 8,000,000) who at all times throughout the year are in a state of ill health, due to various defects and to such minor ailments as headache, colds, and constipation, are surely not more than 75 per cent efficient. This means that for the year there is a loss to industry of 25 per cent on the six billions of dollars paid in wages and salaries to these inefficient persons. In other words, the total annual loss to industry on account of minor ailments is one and one half billions of dollars.

Regarding the preventability of defects and minor ailments which cause inefficiency in industry, no accurate statement can be made. Surely, however, of the many abnormal conditions and defects revealed by various examinations, two thirds can be prevented by hygienic living.⁹ It may, therefore, be stated, as a conservative estimate that the annual cost to industry for preventable defects and minor ailments is approximately 1,000 millions of dollars.

It should be remembered that the above tentative statement is little more than a guess, and that it applies only to the losses incurred within industrial establishments. It does not take into consideration various economic losses

within the home, occasioned by such defects and ailments among the other 70 million persons in the United States.

Cost of Medicine.—Here may be taken into account the cost of medicines for both disabling and minor ailments—the expense of prescriptions furnished by physicians, the cost of legitimate remedies used for self-treatment (one firm claims in its advertisements to sell 34,000,000 bottles per year of one remedy alone), and the vast sums of money spent for proprietary remedies. According to reports collected by the Census Bureau¹⁰ in 1923, the value at place of manufacture of all medicines for the year 1921 was over \$193,000,000, to which 80 per cent may reasonably be added for freight and expense, jobbers' profits, retailers' profits, advertising, and other expenses of marketing, indicating that at least \$345,000,000 per year is being spent by the people of the United States for medicines alone. When it is considered that there are not more than fifty drugs really necessary in the treatment of disease and only six, approximately, that have definitely curative properties,* the guess may be hazarded that, of this amount, at least \$250,000,000 is spent for the treatment of diseases preventable by public health measures and hygienic living, or expended unnecessarily because of ignorance.

Cost of Premature Death.—Although human life was squandered during the recent World War, its economic value came to be more adequately understood. People now realize more clearly that it costs money to keep human beings alive, whether they be unproductive children, disabled adults, or healthy workingmen; and that when a man is cut off from life by disease during maturity, the loss to society is twofold—first, the loss of the money which it costs to raise him to a state of economic efficiency, and, second, the loss to industry of his labor.

What, then, is the economic value of the lives of those persons who die each year of preventable disease? In

* See also page 167.

1920, there were 1,142,558 deaths in the registration area of the United States, and about 1,400,000 in the entire country. Professor Irving Fisher, of Yale University, estimated in 1908, with the aid of considerable statistical data and with figures furnished by eighteen prominent physicians and other scientists, that, at that time, 42 per cent of all deaths were either preventable or postponable.¹¹ It must be observed that, if during any given year it would be possible to prevent or postpone any considerable proportion of the deaths normally to be expected, many such deaths could be prevented or postponed for only a very few years; and that, if an effective program of measures for the prevention and postponement of death were put into effect and maintained, the percentage of preventable or postponable deaths would decrease from year to year.

Professor Fisher also estimated, after considerable investigation that the loss to society from each of these deaths was \$1,700.¹² Considering the decrease in the value of the dollar since that time, it may perhaps be assumed, on the basis of Professor Fisher's valuation, that a conservative estimate of the present loss to society is approximately \$2,500.

Now, definitely what may be said regarding the economic cost of postponable or preventable deaths? Very little. For present purposes, however, it may be suggested that, if for any given year there are approximately 1,400,000 deaths, if 40 per cent of them could be prevented or postponed until the following year or some later time, and if the average loss to society is approximately \$2,500, then the total economic loss for that year is nearly one and one half billion dollars.

If now a hurried review is made of the three or four kinds of economic losses due to disease, it will be seen that amounts

are being dealt with which are beyond the grasp of most persons. It should be remembered that these various estimates are little more than guesses. They may be several

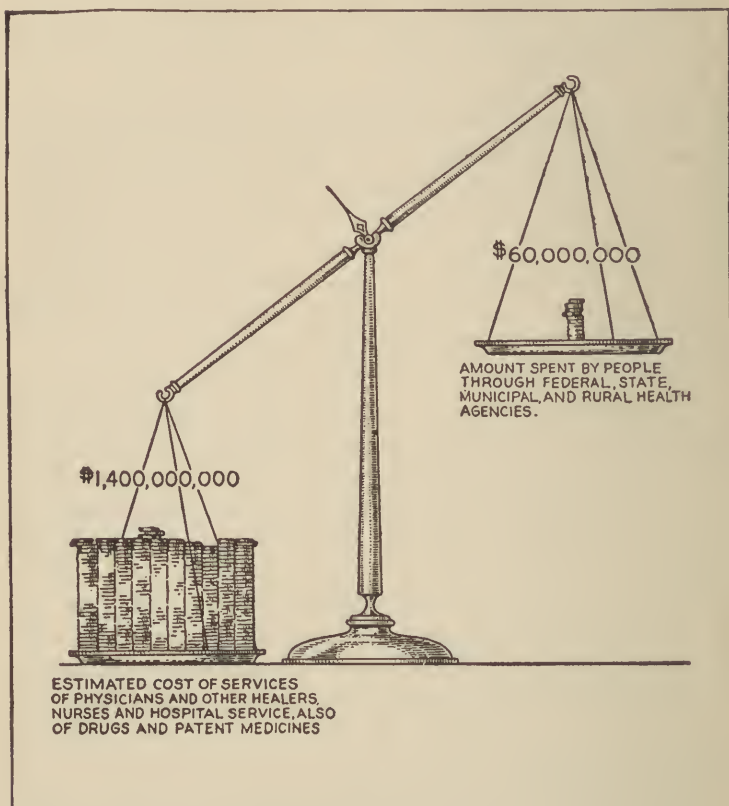


FIG. 22.—ESTIMATED AMOUNTS OF MONEY SPENT BY THE PEOPLE OF THE UNITED STATES IN 1921 FOR HEALTH PURPOSES AND FOR THE CURE OF DISEASE.

hundreds of millions in error. But it should also be borne in mind that conservative figures have been used, and that, if data more nearly accurate becomes available later, the

total amount will probably be greater, not less, than the sum of the amounts here proposed. The \$1,400,000,000 represented by the accompanying drawing (Figure 22) includes only part of the items enumerated; it leaves out of account the cost of decreased efficiency and loss of time, and the cost of premature death.* The total for all items reaches such a large figure as to be almost incomprehensible, unless it be realized that if only an exceedingly small percentage of the amount representing the total economic cost to society of preventable diseases could be used for a program of health activities, based on the utilization of present knowledge and measures proved to be effective,† a sum would be available which would rapidly reduce the death rate and improve to an immeasurable extent the health and happiness of the people of the United States.

* See page 413.

† It has been definitely shown that malaria can be controlled for a very small per capita cost. See page 124.

PART III

THE WARFARE AGAINST DISEASE

With all deductions, the triumphs of sanitary reform as well as of medical science are perhaps the brightest page in the history of our century.

—W. E. H. LECKY.

It is within the power of man to rid himself of every parasitic disease.

—PASTEUR.

We are only in the morning of the world and we are only stammering the first words of our scientific language.

—The Nation.

CHAPTER VI

THE CONQUESTS OF SCIENCE

MAN has lived on the earth for 50,000 years more or less, but prior to the beginning of the nineteenth century A.D. his knowledge of the human body had not made possible the prevention of any disease.*

In primitive times, it will be remembered, the demonic theory of disease prevailed—the belief that maladies are produced by evil spirits and that priest or medicine man, by casting out the offending demons, may bring about cure. Exhortations, drums, and various fetishes were used to frighten away the demons. The association of religion with this method of treating disease very likely led to what is called the punitive theory—the belief that sickness and death are a punishment meted out by outraged deity for the sins of the individual or the race. The miasmatic theory appears to have originated with the Greeks and Romans; and, after being buried for centuries under the weight of Middle Age superstition, it was revived in comparatively recent times. According to this doctrine, vapors or miasma rising from certain kinds of ground, especially low swampy areas, cause disease; night air was supposed to be particularly harmful. Related to the miasmatic theory was the belief that disease spontaneously generates from the decomposition of organic matter; and as late as 1922 a well-known Washington paper deplored editorially the inadequate collection of garbage, “especially during the hot summer months when disease-spreading decay is rapid.” Following the establishment of

* See Figure 1, page 8.

the science of bacteriology in 1881, the hypothesis that disease is transmitted from one person to another through emanations of the body, was gradually replaced by the doctrine of fomites—that objects of various kinds are supposed to convey disease germs, sometimes long distances, from infected persons to the healthy. It has been only during very recent years that man has acquired a knowledge of the true manner in which most diseases are transmitted.¹

The Beginnings of Scientific Preventive Medicine.—Although in the early part of the eighteenth century, the Turks appear to have been practicing for some time inoculation against smallpox, utilizing “matter” from the pustules of smallpox patients,² it was not until about 1796 that Edward Jenner established for the first time the use of vaccine from cowpox in the prevention of smallpox in human beings. Some fifty years later, two pioneers in epidemiology, William Budd and John Snow, began independently their remarkable studies of typhoid fever and Asiatic cholera, which led to the control of these plagues.³ The first discovery of what was later proved to be a disease-producing bacterium was made about 1850, when the French pathologist, Davaine, on examining the bodies of cattle which had died of anthrax, discovered the constant presence of minute rods, shown later by Koch to be the cause of the disease.

Following the suggestion of Cagniard de Latour and Schwamm in 1838, that alcoholic fermentation is caused by a living plant, Louis Pasteur, the great French chemist who had been studying the diseases of wine and beer, definitely established, between 1857 and 1863, the germ theory of fermentation. He showed that the aging of wine by bacteria could be prevented without changing its taste by heating it to a temperature of 55° to 60° C. This principle has since been applied to the preservation of milk, and now much of our milk for babies is kept free from the harmful action

of bacteria by this simple heating process, universally known as "pasteurization." Pasteur also developed a vaccination against hydrophobia which has come to be widely used. The Pasteur Institute in France was established for the prevention of this disease, and similar institutes are now found in various parts of the world.⁴

Stimulated by the successful investigations of Pasteur, Joseph Lister, an eminent surgeon of Edinburgh, somewhat later, became convinced that many wound diseases were probably due to germs, and by using antiseptics he soon established his thesis and paved the way to the present practice of aseptic surgery—one of the most brilliant triumphs of the germ theory of infectious diseases.

Coincident with and following the work of Pasteur, Robert Koch, in 1876, showed that the bacterium discovered by Davaine was the cause and not the consequence of anthrax; * and in 1882, Koch, by replacing "liquid" with "solid" culture media, established a highly improved method of cultivating disease germs. During the twenty years after Pasteur began the use of "liquid" culture media in the study of bacteria, progress was slow and uncertain. It was difficult to obtain "pure" cultures, because, in fluid media, various kinds of microscopic organisms, especially those with independent power of motion, easily mingled with the bacteria being investigated. The use of Koch's "solid" culture media, such as gelatin and agar-agar, made possible the rapid reproduction of bacteria without interference by foreign micro-organisms. Bacteriology from this time advanced by leaps and bounds.

Koch announced in 1882 the discovery of the micro-organism of tuberculosis, causing a profound sensation throughout the world. So conclusive was his evidence that in a surprisingly short time it was accepted. The following year, 1883, witnessed the discovery by Koch of the germ

* Lankester would give Davaine the credit for establishing also the causal relation.⁵

of Asiatic cholera, and one year more brought the bacillus of diphtheria and that of tetanus, together with new and careful studies by Gaffky of the bacillus of typhoid fever, which had been partially worked out earlier by Eberth and Koch. While to Louis Pasteur belongs the high privilege of having been the founder of bacteriology, it was Robert Koch who definitely established it as a science.⁶ The conquest of a few of the more deadly diseases will now be briefly discussed.

Smallpox.⁷—Unfamiliarity with smallpox has bred contempt. So free from this disease, until recently one of the worst scourges of history, have we become, that we undervalue the means responsible for our freedom and even resist the efforts of sanitarians to maintain protective measures. As late as the middle of the eighteenth century, smallpox, wrote an English physician, was "the terror and destroyer of the great part of mankind." In the ordinary course and duration of human life scarce one in a thousand, he said, escaped it. In all ranks of society it was the commonest epidemic disease.

When Edward Jenner was a youth pursuing the study of medicine, a girl came to his master's shop for advice, and incidentally made the remark that she could not take smallpox because she had had cowpox. The incident caught Jenner's attention. He suggested to others the possibility of preventing smallpox through the use of cowpox inoculation, but his friends laughed at him and threatened to expel him from their society. In London, John Hunter advised him to work systematically on his theory. He made observations and experiments for twenty years, and in May, 1796, vaccinated James Phipps, a boy of eight, with lymph taken from the vesicles of cowpox on the hand of Sarah Nelmes. Later, on two occasions, the boy was inoculated with smallpox. The disease failed to appear. Shortly after, Jenner issued a summary of his observations and subsequently a statement defending his work against many

criticisms. So implicit was his faith that he vaccinated his own son on several occasions. His discovery, however, was received at first with indifference and even antagonism; he was caricatured and abused, and his work denounced from the pulpit as diabolical. It was said that children who were vaccinated became "ox-faced," that abscesses broke out indicating "sprouting horns," that the countenance gradually became "transmuted into the visage of a cow" and "the voice into the bellowing of bulls." In one village, the first persons who permitted themselves to be vaccinated were pelted and driven back into their homes if they appeared out of doors. Finally, two ladies of title had the courage to have their own children vaccinated, and prejudice at last succumbed.

The medical profession gradually came around to the acceptance of Jenner's work, and several even sought to rob him of the honor of the discovery. At the suggestion of his friends, Jenner applied to Parliament for a grant to enable him to continue his studies. "If Doctor Jenner had not chosen openly and honorably to explain to the public all he knew about the subject," said Matthew Baillie, appearing before a committee of Parliament, "he might have acquired a considerable fortune. In my opinion it is the most important discovery ever made in medicine." Parliament gave him a grant of 10,000 pounds and later 20,000 pounds more. He is now held to be one of the great benefactors of mankind. Statues of Jenner may be found in the Gloucester Cathedral, in Trafalgar Square, London, in Boulogne-sur-Mer, and in Brünn, Moravia.

As a result of the application of Jenner's discovery, there has been little smallpox in the United States during recent years, although from 1870 to 1895 epidemics were not infrequent. Figure 23⁸ on the following page shows the progress of the conquest of smallpox in New York City. During the past few years relatively minor outbreaks have occurred in various sections of the country; and, while the

decrease in the number of cases has continued, there was a marked increase in the case fatality rate from 1920 to 1922—recent developments which should be a warning that vaccination must not be abandoned. The principle of compulsory vaccination was upheld in 1922 by a decision of the United States Supreme Court.⁹

The efforts of misinformed persons in combating vaccination will be discussed later.

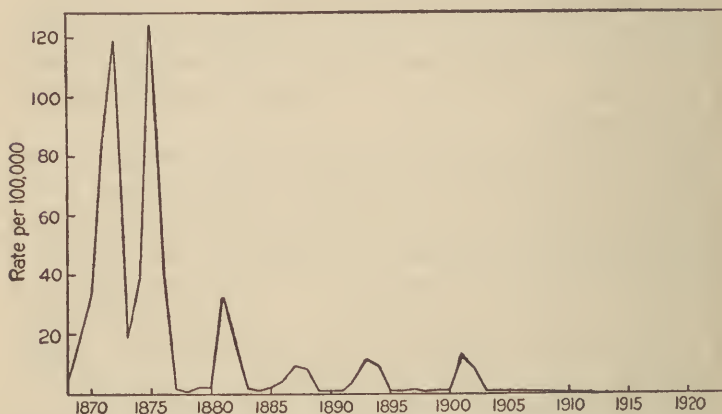


FIG. 23.—MORTALITY RATE BY YEARS FOR SMALLPOX, NEW YORK CITY.

Yellow Fever.¹⁰—Until recent times, yellow fever has been one of the most horrible and most shunned epidemic diseases in the United States. The first authentic record of it in any country is that of an epidemic in Central America in 1596. It appeared in this country 112 times between the years 1702 and 1878, according to one writer, being most frequent and most destructive in the Southern States, especially in the city of New Orleans. In Philadelphia in 1793, it caused great consternation among the people. During the period of the epidemic, writes one author, “dismay and affright were visible in the countenance

of almost every person. . . . Many shut themselves in their houses and were afraid to walk the streets. . . . The corpses of the most respectable citizens, even those who did not die of the epidemic, were carried to the grave on the shafts of a chaise, the horse driven by a negro unattended by a friend or relative. . . . People hastily shifted their course at the sight of a hearse coming towards them. . . . Acquaintances and friends avoided each other in the streets. . . . A person with crape or any appearance of mourning was shunned like a viper. . . . Indeed, it is not probable that London at the last stage of the plague exhibited stronger marks of terror than were seen in Philadelphia." The migration of men, women, and children from the city, by every possible avenue of escape, is described by another writer, railroads being unable to accommodate all who were endeavoring to flee from the epidemic.

From 1800 to 1879 yellow fever, with two exceptions, visited the United States every year. During this period the great epidemics were those of New Orleans, in which there were 29,020 cases with 8,101 deaths, and Memphis, with 17,600 cases and 5,150 deaths. The economic cost of yellow fever epidemics has been high. Over four and one half million dollars was contributed in 1878 for the relief of the stricken cities of the South. Involving a total estimated loss to the country of not less than \$100,000,000, the epidemic of that year cost New Orleans alone over \$10,000,000. Evidence submitted to a congressional committee indicated that the Southern Pacific Railroad Company in Texas and Louisiana during the epidemic of 1897 suffered a loss of over \$1,000,000.

It was generally supposed prior to 1900 that yellow fever was transmitted through fomites, but as early as 1848 J. C. Nott suggested that insects play a part as carriers of the disease; and to Carlos J. Finlay belongs the credit of first formulating a definite theory in regard to its transmission by the mosquito. Henry R. Carter of the Marine

Hospital Service, now the Public Health Service, made observations at about the time Finley set forth his theory which later proved most valuable.

Yellow fever appeared in 1890 among American soldiers stationed at Havana, and a commission was appointed by the United States Army to study the disease. It was composed of Walter Reed, James Carroll, Jesse W. Lazear, and Aristides Agramonte, Doctor Reed being the directing head, Doctor Carroll having charge of bacteriological investigations, Doctor Lazear specializing in mosquito work, and Doctor Agramonte in autopsies and pathological work. After various preliminary studies, an experimental station was established about one mile from the town of Quemados, Cuba. Two buildings were erected, one known as the "infected mosquito building," and the other as the "infected clothing building." Privates John R. Kissinger and John J. Moran volunteered their services; Walter Reed, after explaining fully the danger and suffering involved should the experiment be successful, accepted them; both young men declined money compensation.

When all was ready, five mosquitoes which had previously drawn blood from yellow fever patients were permitted to bite Private Kissinger. Three young Americans consented to jeopardize their lives by exposure to fomites, passing several nights in the small, badly ventilated building, with the filthy garments and bed clothing of yellow fever patients, and breathing the air supposed thus to have been terribly contaminated. Private Kissinger and others who later permitted themselves to be bitten by infected mosquitoes developed the disease; none of those who exposed themselves to contaminated garments were stricken. All taking part in the experiments freely risked their lives. Doctor Lazear was accidentally bitten and developed an attack of the disease which proved fatal. These experiments with others carried on over a period of weeks proved conclusively that yellow fever is transmitted by the *Stegomyia* (now

Aedes) mosquito and (what is almost equally important) that it is not carried by fomites.

The germ of yellow fever transmitted by the mosquito was not identified until 1919, when Noguchi described a spirochete, which he isolated from cases of yellow fever, as the probable cause of the disease.¹¹

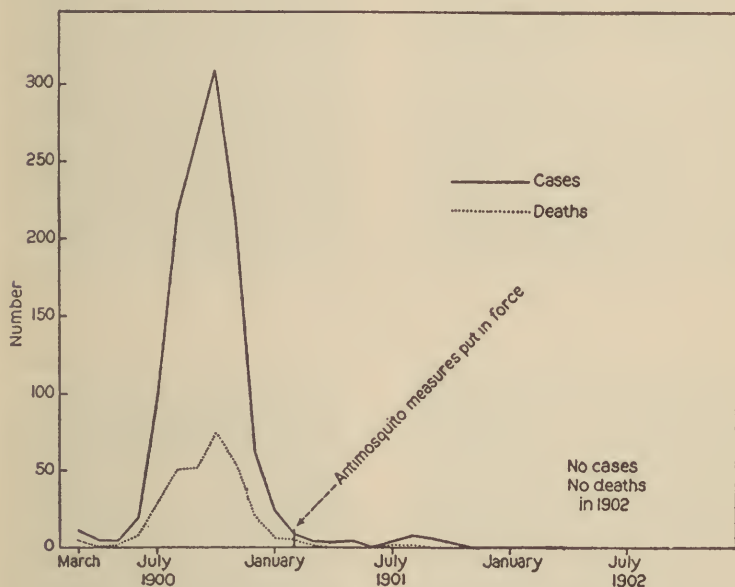


FIG. 24.—CASES AND DEATHS FROM YELLOW FEVER IN HAVANA, CUBA, BEFORE AND AFTER ANTIMOSQUITO MEASURES WERE PUT INTO EFFECT.

Insufficient importance, in the opinion of Walter Reed, has been accorded the painstaking and valuable work of Henry R. Carter of the Public Health Service on yellow fever. Reed wrote that "Carter's work in Mississippi did more to impress me with the importance of an intermediate host than everything else put together." In the opinion of

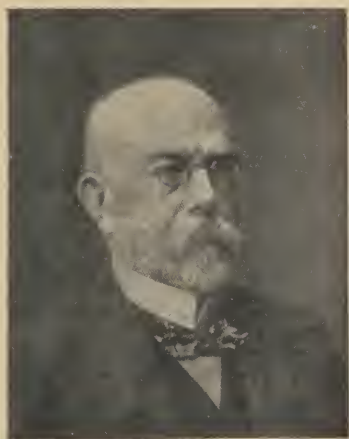
the Southern Medical Journal, Carter's publication on *The Determination of the Period of Extrinsic Incubation of Yellow Fever* places him among the immortals. Gorgas speaks of Carter as one of the "great pioneers in malaria and yellow fever work."

The value of Reed's work was established by the prompt results achieved in Havana under the direction of William C. Gorgas. Figure 24¹² on the preceding page shows the high rate during the so-called pre-mosquito period and the surprisingly low rate immediately following the application of mosquito control measures in that city. When the United States Government undertook the construction of the Panama Canal, it realized that the problem of sanitation was of utmost importance. Yellow fever had been one of the greatest sources of difficulty in previous attempts to build the canal. General Gorgas was placed in charge of all sanitary work, and by utilizing the contributions of Walter Reed and his predecessors, he was able to inaugurate measures which resulted in preventing the disease from even getting a foothold in the Canal Zone.

Soon after the discovery of Walter Reed and his associates, the danger of yellow fever in the United States was virtually eliminated.

Typhoid Fever.¹³—The discovery of the *bacillus typhosus* in 1880 by Eberth, and the establishment of its relationship to typhoid fever in 1884 by Gaffky, were probably a direct result of the wide interest in bacteriology due to the notable work of Louis Pasteur. That the disease was transmitted by the patient's excreta was pointed out in 1856 by William Budd; and as early as 1874 expert opinion had agreed upon the existence, in discharges from the intestines of infected persons, of specific poisons capable of producing typhoid fever.

An epidemic of typhoid fever was first traced to the use of contaminated drinking water in Lausen, Switzerland, in 1872. This village, consisting of 90 houses and 780



Courtesy of Army Medical Museum

ROBERT KOCH



Courtesy of Army Medical Museum

EDWARD L. TRUDEAU



Courtesy of Army Medical Museum

WALTER REED



WILLIAM C. GORGAS

(See also pages 75 and 88.)

inhabitants, had never suffered from a typhoid epidemic, so far as is known, and for many years there had been not even a single case. Suddenly an outbreak occurred, affecting about 17 per cent of the population. The fever appeared to be distributed quite evenly over the town, with the exception of certain houses which obtained their water from their own wells and not from the public water supply. Attention was thus centered upon a spring from which the public water supply was brought; and, after a series of investigations, it was found that the water from the spring came through a subterranean passage from a valley some miles away, where lived a peasant who had had a severe case of typhoid fever.

In studying an epidemic of typhoid fever in Plymouth, Pennsylvania, during the spring of 1885, where, out of a population of about 8,000 persons, 1,104 contracted the disease and 114 died, L. H. Taylor reached the conclusion that the epidemic was due to the presence of the disease in one person whose excreta, without being disinfected, had been thrown within a few feet of the edge of a high bank sloping precipitously down to the stream supplying the town with water.

From 1860 to 1880, typhoid fever was one of the major communicable diseases. In 1865, 134 persons per 100,000 died of this disease in Massachusetts.¹⁴ Since about 1880, following the discovery of the typhoid bacillus, it may be observed that, in New York City for instance (see Figure 25),¹⁵ the mortality rate has been going steadily down. The disease, in 1921, killed in New York City only 2 persons out of every 100,000.*

Typhoid fever is one of the few diseases which can be almost absolutely prevented through the application of comparatively simple measures, possible in any community which will spend a reasonable amount of money. In the opinion

* See Appendix 2 (page 441) for typhoid fever mortality rates by states.

of Allen W. Freeman, the installation of a pure water supply and an adequate sewerage system will reduce the typhoid death rate to approximately 10 to 20 per 100,000 per annum; and the compulsory pasteurization of the milk supply and the painstaking study of each case of typhoid fever discovered in the community, together with the bacteriological examination of convalescents, will bring the rate down virtually to the vanishing point.¹⁶ The campaign for the eradication of flies, of course, is helpful in preventing the communication of the disease from infected

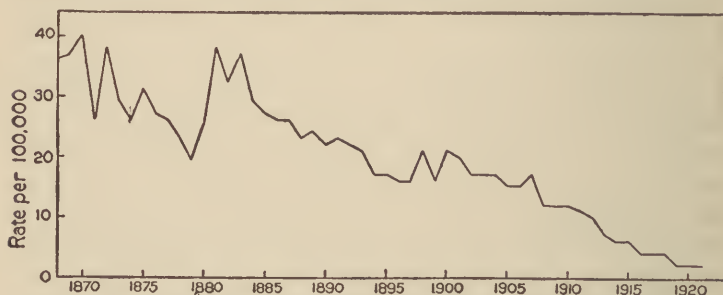


FIG. 25.—MORTALITY RATES FOR TYPHOID FEVER BY YEARS, NEW YORK CITY.

persons; it is of course essential to disinfect the excreta of patients.

The conquest of typhoid fever cannot be ascribed to the genius of any one person, either in Europe or in the United States. The successful combating of the disease here has been due to numerous bacteriological studies and investigations of stream pollution and filtration processes, followed by the installation of pure water supplies and sewerage systems, and later to the pasteurization of milk—a measure made possible, of course, by the discoveries of Pasteur. Of particular value in the United States has been the work of William T. Sedgwick, George C. Whipple, Allan Hazen, A. J. McLaughlin, L. L. Lumsden, M. J. Rosenau, W. H.

Frost, Allen W. Freeman, and E. C. Levy. Among organizations, the Massachusetts State Board of Health did pioneer work of inestimable value. The Typhoid Fever Board of the United States Army, consisting of Walter Reed, Victor C. Vaughan and Edward O. Shakespeare, demonstrated that typhoid fever is a contagious, as well as an infectious, disease and reached other conclusions which have had much to do with the remarkable reduction of the disease in army life.

The early work of Pfeiffer and Kolle followed by later researches—in England by the work of Wright and in this country by that of Richardson—has made available a typhoid vaccine. It was made compulsory in the army in 1911 and promptly became effective, there having been only 4 cases of typhoid fever during 1913 in an enlisted force of over 80,000 men. The effectiveness of typhoid vaccination is well established. It lowers the morbidity and has a striking effect in bringing down the mortality rate. To attempt the immunization of any population as a substitute for sanitary measures, however, would be folly. Typhoid vaccination will always be wise for persons traveling in unprotected communities; it will probably never be generally used if progress in sanitary engineering continues.¹⁷

Other Conquests of Science.¹⁸—The home of *Asiatic cholera* appears to have been the delta of the Ganges River. It is estimated that four million persons died of the disease in India from 1902 to 1911. Cholera has been brought to the United States a few times, but has been quickly controlled. In the Philippine Islands it prevailed for years, but is now under control. Scarcely a country in the world has been free from a visitation at some time by this fatal malady. Measures for the prevention of the disease are similar to those used in the control of typhoid fever. Cholera, together with typhoid fever, was believed, as early as 1874, to be produced by a specific poison discharged from

the human intestine. An epidemic of cholera in London occurring in 1854 was traced in a remarkable way by John Snow to the water of the now famous Broad Street pump. The *Spirillum cholerae*, or the "comma bacillus," discovered in 1883 by Koch, is now generally regarded as the cause of the disease. As a result of the joint contributions of bacteriology and engineering, the United States has been saved from the scourge of cholera.

The control of *typhus fever* is among the great conquests of science. In investigating its cause, Ricketts and Pro-wazek succumbed to the disease. But it has now been well established by various scientific researches that it is due to a bacteria-like body called *Rickettsia prowazeki*, and that it is transmitted by the body louse. This mode of conveyance was first proposed by Coberus at the beginning of the seventeenth century, and was experimentally demonstrated by Nicolle and his collaborators in 1909, and confirmed by the work of Ricketts and Wilder, Anderson and Goldberger, and others. Goldberger has shown that the head louse also may transmit typhus fever. The successful control of the disease involves chiefly the eradication of the body louse. During the last twenty-five years there have been a very few cases of typhus fever in mild form among the poorer Eastern European immigrants of large cities in the United States, and since the World War there have been epidemics in various European and Asiatic countries. But wherever the proper sanitary measures have been applied, typhus has been conquered.

The work of Pasteur led to the discovery of the bacillus of *tetanus* in 1884 by Nicolaier, and to the establishment of its relationship to lockjaw by Kitasato five years later, thus making possible the subsequent studies which have led to the development of methods of controlling this dread affliction.

The discovery of the *bacillus pestis* as the cause of *bubonic plague* in 1894 was the result of the independent work of

Yersin and Kitasato. This, with subsequent investigations by British workers in India and the demonstration of the important part played by the flea and the rat in the spread of plague, has led to its control in the United States. Measures used in this country will be discussed in a subsequent chapter.*

Remarkable discoveries have been made also in combating malaria, diphtheria, pneumonia, syphilis, gonorrhea, tuberculosis, hookworm disease, and pellagra but their control has not yet achieved the status of conquest. These contributions of science will be dealt with in the following chapters on "unconquered enemies" and "enemies not yet attacked."

Modern science then, has made possible the conquest of at least six major communicable diseases, viz., smallpox, yellow fever, typhoid fever, cholera, typhus, bubonic plague—that is to say, methods have been provided by science for their elimination, and, so far as the United States is concerned, they have been virtually eradicated or kept out of the country. The first three, smallpox, yellow fever, and typhoid fever, have caused inestimable suffering and economic loss in the United States. Their control has been a great boon to the nation's health.

In laboratory, hospital, camp, river bed and swamp, the bacteriologist and engineer, against discouragement, sometimes against ridicule, often risking life, have quietly and persistently, usually through periods of years, pursued those researches which have brought about the prevention of incalculable suffering and given health and prolonged life to countless thousands.

* See page 211.

CHAPTER VII

UNCONQUERED ENEMIES

WHEN Edward L. Trudeau was a young man, an older brother was stricken with tuberculosis, and Edward nursed him for six months to the time of his death. At the age of twenty-five, soon after graduation from medical college, he himself was found to be tuberculous. He was ordered away from home, and decided to take a vacation with his family in the Adirondack Mountains. Trudeau then was not expected to live six months. During a short trip in the mountains, he was caught in a blizzard, his horses were exhausted, and Trudeau and his small family were obliged to remain two days in the snow. Discovering he was none the worse for this experience, he considered the advisability of spending a winter in the bracing air of the mountains. At that time, about fifty years ago, fresh outdoor air was considered harmful instead of beneficial to sick persons, and Trudeau's medical advisers considered this plan to be a sort of suicidal mania—all except his wife and one of the physicians. His boldness saved his life. Under the influence of outdoor living, he greatly improved in health, and was soon able to practice medicine among the mountain people. Four years later he had a few tuberculous patients, who came to the Adirondacks and placed themselves in his care as a last hope of prolonged life. About this time Trudeau dreamed a dream. He saw the forest about his home melt away and the mountain side become dotted with houses built inside out, as though the inhabitants lived on the outside. He made his dream come true. The Adirondack

Cottage Sanitarium was established, and soon became famous throughout the country. Trudeau's work at the sanitarium attracted widespread attention, and others were established. Although Koch identified in 1882 the tuberculosis bacillus and proved beyond doubt that it was the cause of tuberculosis, the usefulness of this discovery was greatly limited until Trudeau showed that outdoor life, supplemented by rest and proper food, were effective in the cure and prevention of this disease.¹

Tuberculosis is one of the maladies which have retreated before organized attacks of medical and social science, but which remain enemies of the nation—important causes of death and sickness—partly because health agencies have not had adequate money and personnel for attacking them, and partly because society has failed to apply the sociological and economic measures which the discoveries of science have shown are essential to their eradication. In this chapter there will be briefly considered the chief of such diseases. They are tuberculosis, syphilis and gonorrhea, the diseases of infancy and childhood, mental diseases, cancer, malaria, hookworm disease, and the industrial diseases.

Tuberculosis.—This is not only one of the principal causes of sickness, but to this disease are due almost one tenth of all deaths. Rosenau estimates that it costs the United States about \$500,000,000 annually,² and Haven Emerson says that the wastage from tuberculosis in terms of dollars alone was in 1922 over \$850,000,000.³ There is evidence tending to indicate that, although the proportion of deaths from tuberculosis has decreased, the prevalence of tuberculosis is increasing.⁴ Its victims for the most part are adults in the period of life of greatest usefulness. About 30 per cent of all deaths between the ages of fifteen and sixty, as has already been seen, are due to the pulmonary form alone. Children, beginning very early in life, are attacked by the tuberculosis bacilli and develop one or more lesions, usually in the lungs, which soon become walled off;

when the age of twenty-one is reached virtually all persons have become so affected. Fortunately, in most cases the disease progresses no further; in fact, the small walled-off lesion brings about in most persons an effective degree of immunity. Not infrequently, however, tuberculosis in one form or another assumes an active stage among little children; and, among adults when conditions are unfavorable, the disease progresses and causes the high mortality indicated. Of the 21½ million children in our schools to-day, almost two million will later die of tuberculosis if the present rate continues.⁵ Tuberculosis is the great white plague.*

This disease, perhaps more than any other, is associated with unfavorable economic conditions—it is more prevalent among the poor than among the well-to-do. Because the tuberculosis bacilli are transmitted in the sputum from person to person, the disease is most often found where there is overcrowding. In addition, improper food, bad housing, overwork, and worry appear to lower resistance and thus encourage the spread of the infection. In England and Wales during 1910 to 1912 there was a marked difference, for the 25-34 year age group, between the death rate for pulmonary tuberculosis among those whose economic status enables them to have proper living conditions and the rate among those who do not have so favorable an environment. The death rate among the clergy was 66 per 100,000; among agricultural laborers, 100; among cotton operatives, 132; and among shoemakers (in two districts only—factory workers presumably), 354.⁶ These figures do not show that bad housing causes tuberculosis; many influences enter into any attempted analysis of such situations. But the figures are significant, and suggest at least a relation between bad housing and this disease.

Prevention is brought about by avoidance of close contact with infected persons, by the use of pasteurized milk

* See Appendix 2 (page 441) for tuberculosis mortality rates by states.

or milk from tuberculin-tested cattle, by increasing resistance through the use of good food; and by adequate rest and outdoor living. To provide bedrooms for tuberculous adults, either in hospitals or at home, to which little children will not have access, Newsholme believes is highly important.⁷ Better wages will enable a larger proportion of people to profit by these preventive measures.

The first battle in the warfare against tuberculosis was won when Robert Koch discovered the tuberculosis bacillus; and the next significant achievement was the discovery by Edward L. Trudeau of the curative value of outdoor living and proper regimen. Lawrence F. Flick, of Philadelphia, was among the pioneers responsible for the program of preventive measures now in use throughout the country. The Henry Phipps Institute for the Study, Treatment, and Prevention of Tuberculosis was established in 1903 and in 1904 there was organized the National Tuberculosis Association.⁸

When this association's work began, the death rate from tuberculosis in the registration area was 200 per 100,000. There were 100 hospitals and sanatoriums with an aggregate of about 10,000 beds, less than half a dozen dispensaries and clinics, no tuberculosis nurses, no open-air schools, and no systematic community programs for the control of the disease. In 1922, there were over 700 hospitals and sanatoriums scattered through every state of the Union with a combined bed capacity of 60,000, there were 888 tuberculosis clinics, 1,200 tuberculosis associations, 3,000 open-air schools and fresh-air classes, about 1,000 public health nurses giving part or full time to tuberculosis work, and organized community programs in all parts of the country—and the death rate had been cut in half.⁹

Figure 26¹⁰ on the following page shows the decline in the death rate from tuberculosis in Massachusetts, where reliable records have been kept for a longer period than in other states. The curve for Massachusetts is fairly repre-

sentative of progress in tuberculosis control throughout the country. It may be assumed, therefore, that the death rate for the United States began to go down in 1860 or earlier, and that a slight acceleration in the downward trend occurred soon after the discovery of the bacillus by Koch and the beginning of Trudeau's work. But it appears that the rate



FIG. 26.—MORTALITY FROM TUBERCULOSIS (ALL FORMS) PER 100,000 PERSONS, IN MASSACHUSETTS, 1857-1920.

of decrease has not been accelerated by the modern tuberculosis movement.

Have the efforts of the various tuberculosis associations and state and city boards of health, then, been unproductive? Would the rate have continued to drop as rapidly had these organizations not expended, as they have done, an immense amount of time and energy in combating the disease? Two possible answers are suggested. First, improved facilities

for diagnosis have tended to increase the number of cases reported, and the widespread interest in tuberculosis during recent years has even led to the diagnosis of tuberculosis as a *cause* of death, when it has been only *present* in some relatively minor form. On the basis of former standards of diagnosis, probably the rate of decline would appear more rapid. Second, the development of industrialism, with its congestion of population and an increased degree of exposure (particularly among the young) resulting therefrom, has tended probably to increase the actual number of cases. If, since the beginning of industrialism, organized preventive measures had not been applied, the rate, at least in the cities, very likely would have been more nearly stationary.

On the other hand, Haven Emerson¹¹ suggests that in considering the effectiveness of organized anti-tuberculosis work, the improved financial and living conditions of the poor (including decreased alcoholism and lessened expenditure for alcohol), should be taken into account. It is also suggested that, even prior to the discoveries of Koch and Trudeau, Americans were gradually becoming immune.* Both the improved condition of the poor and the tendency towards the development of an immune population would at least partially account for the decreasing rate before the beginning of the modern anti-tuberculosis movement, but it is very doubtful whether the downward trend would have continued in the face of the adverse conditions suggested above, without such organized measures as have been carried on during the last twenty years.

Regardless of the validity of these particular explanations, it is generally agreed that the tuberculosis rate would not have dropped so *rapidly* as it has during the past twenty years, without organized effort. That modern measures are effective is shown by the success of a demonstration in

* This theory is supported by observations among savage tribes, where the introduction of tuberculosis has been far more fatal than in America and Europe to-day.¹²

Framingham, Massachusetts, where the rate has been conspicuously reduced, at least partially as a result of organized preventive work. For the ten-year period prior to the beginning of the demonstration, the average yearly tuberculosis death rate (corrected for residence and certification errors) in Framingham was 121 per 100,000 population. After four years' organized work, it had been reduced to 53.6 (the average rate for 1921 and 1922), which was less than one half the former rate.¹³ Emerson¹⁴ invites particular attention to the evident effect of improving milk supplies through pasteurization. Since the milk of New York City has been pasteurized, there has been a marked change in the rate for non-pulmonary tuberculosis. It dropped from 27 per 100,000 in 1914 to 14 in 1921.

The achievements noted, however, should not make sanitarians too optimistic. Britten and Sydenstricker, after making a thorough study of mortality from pulmonary tuberculosis in recent years, reached the conclusion that "there are indications that a low point has been temporarily reached in mortality from pulmonary tuberculosis in the United States and that either the recent rapid decline will be arrested or an actual increase—possibly another upward variation—will take place. In other words, we may be in the 'trough' of a periodic 'wave'."¹⁵

The National Tuberculosis Association * is largely responsible for the development of tuberculosis work throughout the country. There are now associations in all the forty-eight states and the District of Columbia. As these organizations have developed, the national association has worked largely through them. It maintains a field service and assists in conducting surveys, group conferences, and institutes. It establishes standards for the construction and maintenance of sanatoriums, hospitals and open-air schools. It stimulates research work. Largely through its efforts,

* See Appendix 14 for list of national private health organizations.

6,000,000 children were enrolled in the Modern Health Crusade in 1920. The Association supplies educational material regarding the prevention of tuberculosis to magazines and newspapers, distributes pamphlets, and lends lantern slides, motion pictures, and other educational material. It also publishes the *Journal of Outdoor Life*, the *Monthly Bulletin*, and the *American Review of Tuberculosis*.¹⁶

Venereal Diseases.—In many respects the venereal diseases constitute a greater menace to the nation's health than does tuberculosis. Syphilis is probably the primary cause, it will be remembered, of approximately 10 per cent of all deaths. In the seventeen states, in which during 1920, both of these diseases were reported, the records show fewer than 87,000 cases of tuberculosis and over 154,000 cases of syphilis and gonorrhea.¹⁷ The relatively high prevalence of venereal diseases may have been only apparent—possibly syphilis and gonorrhea were more carefully reported by physicians than was tuberculosis. Neither figure, of course, includes all the cases.

Syphilis and gonorrhea are diseases of youth. Among 8,413 cases reported to the State Board of Health of Indiana, there were more cases for persons 21 years old than for any other age. Among males, there were 13 cases at 14 years of age, 24 at 15 years, 333 at 18 years, and the largest number, 489, at 21 years of age. Among females, the largest number was 170—among girls 19 years of age.¹⁸ Figure 27 on the following page shows the morbidity rate at various ages for a 2¼ year period.

The economic costs of syphilis and gonorrhea mount to surprisingly high figures. Stokes believes that the annual cost of insanity due to syphilis alone would approximate \$500,000,000. He says: "If insanity, a relatively uncommon complication of syphilis, can alone cost more than a half billion dollars, the cost of illness and death from other and equally grave complications, such as heart and kidney

disease, blindness, deafness, paralysis due to nervous change, when added together, will total figures that take rank beside the stupendous costs of war. These are estimates of the cost of consequences. The wastage of money spent on ineffective treatment, on the maintenance of hospitals and dispensaries, on medical fees, and through reduc-

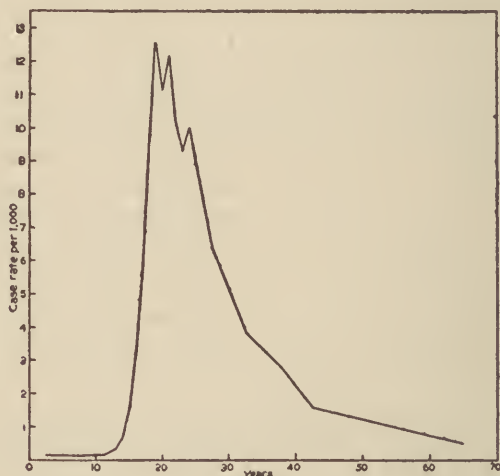


FIG. 27.—CASE RATE OF VENEREAL DISEASES AMONG WHITE PERSONS OF DIFFERENT AGES, BASED ON REPORTS TO INDIANA STATE DEPARTMENT OF HEALTH, JANUARY 1, 1918, TO MARCH 1, 1920. RATES BASED ONLY ON CASES REPORTED, WITH NO ALLOWANCE FOR CASES NOT REPORTED. (CENSUS OF 1920 USED.)

tion of efficiency without absolute crippling and death, is beyond the reach of comprehension.”¹⁹

The discovery of a blood test for syphilis in 1904 by Wassermann, Neisser, and Bruck, the discovery of the germ of syphilis, the *treponema pallidum*, on April 5, 1905, by Schaudinn and Hoffmann, and the invention of a compound of arsenic by Ehrlich (first made in Germany and known as salvarsan and now made in the United States under the name arsphenamine) for the treatment of syphilis—these

achievements constitute in the field of venereal disease control the chief contributions of science.²⁰

The war made it necessary for the nation to face the problem of syphilis and gonorrhea. With the mobilizing of troops on the Mexican border in 1916, there was also a mobilization of infected prostitutes. A serious epidemic was threatened, but fortunately the War Department took vigorous measures to control the situation. When over 2,000,000 men were drafted in 1917 and reported at various cantonments, a large number were found to be infected (see Figure 28).²¹ A program of preventive measures, however, was in operation under the direction of the Commissions on Training Camp Activities of the War and Navy Departments, and, as a result of these and subsequent measures, there was less venereal disease in the United States Army during the recent war than among the troops of any nation during any war of recent centuries.²²

The "Chamberlain-Kahn bill" was approved by the President of the United States in July, 1918, making available for the ensuing two years over \$4,000,000 for the program of combating venereal diseases, and creating the Division of Venereal Diseases in the United States Public Health Service and the United States Interdepartmental Social Hygiene Board. Soon afterwards, most state boards of health established divisions of venereal disease, and a comprehensive program of medical, educational, and legal measures was rapidly put into effect, under the leadership of the Public Health Service.²³

The medical measures consist of the treatment at clinics of infected persons free or at cost, the reporting of venereal diseases, and the improvement of treatment by practicing physicians. The legal measures include the enactment and enforcement of laws for the suppression of prostitution, which is the chief means by which these diseases are spread.* The dissemination of information through lec-

* See page 367.

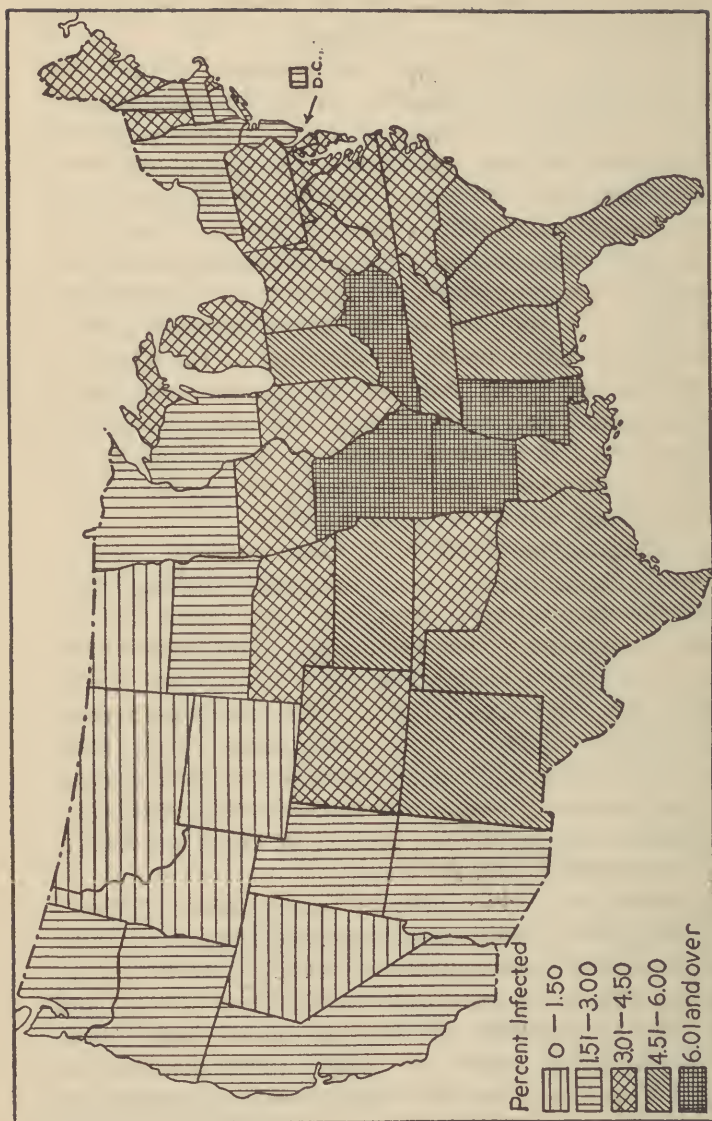


FIG. 23.—THE PERCENTAGE OF VENEREAL DISEASES AMONG WHITE SOLDIERS IN THE UNITED STATES ARMY DURING 1918 ACCORDING TO STATE OF RESIDENCE.

Explanation of Map: The darkest states are those whose white soldiers showed the highest percentage of venereal diseases, acquired before and during service, in the year 1918. See legend for percentages.

tures, lantern slides, pamphlets, motion pictures, newspaper advertisements, and similar devices make up the educational measures. Over 50 millions of pamphlets were distributed during the first four years by the state departments of health and the Public Health Service. Particular emphasis has been placed upon so-called "emergency measures" among adolescent boys and girls, consisting in the showing of card exhibits and lantern slides and in the distribution of pamphlets, in the hope of preventing infection among those at the age of greatest temptation. In co-operation with the Bureau of Education, careful, systematic efforts have been made to encourage the introduction of a few important facts regarding the venereal diseases and the hygiene of sex into certain courses, such as biology, hygiene, physical education, and domestic science, now established in the high school curriculum. The chief problem in this connection has been the training of teachers with a scientific point of view, a knowledge of subject matter, and a wholesome attitude towards life.

In the development of measures for the repression of prostitution, the Interdepartmental Social Hygiene Board has aided the state boards of health. Through this Board the federal government has disbursed funds to medical colleges and other institutions for the discovery of more effective medical measures for treating the venereal diseases, and other funds to educational institutions for the development of better educational methods.

Prominent among the agencies working for the control of these diseases, has been the American Social Hygiene Association. Together with the International Committee of Young Men's Christian Associations, it was effective in bringing to the attention of the War Department in 1917 the seriousness of the venereal disease problem. The Association maintains a staff of specialists in the fields of law enforcement, medical measures, and educational activities, who are available for the development of local social

hygiene work. It publishes the *Journal of Social Hygiene* and a large number of scientific pamphlets; also circulars, motion pictures, exhibits, and other materials.

At the end of five years of systematic work in combating venereal diseases, there is some evidence pointing toward progress. In Mississippi, where an unusually large proportion of physicians systematically report cases of syphilis and gonorrhea, there was a marked reduction of cases reported from 1919 to 1921.²⁴ The venereal disease control officers of several state boards of health have presented various data indicating a decline in incidence. Other health officers, however, believe that the decrease, though apparent, is not real. But there are other indications of progress. The Metropolitan Life Insurance Company stated in June, 1922, that "there is undoubtedly much less mortality from venereal disease than there was ten years ago" among its many thousands of industrial policy holders.²⁵ Statements of over 60 university presidents are significant.²⁶ In reply to an inquiry regarding the attitude of students towards sexual promiscuity during the past fifteen years, 57 per cent of these presidents consider that there has been an improvement; only 3 per cent believe that conditions are now worse. Many of them voluntarily refer to the prevalence of venereal diseases. Reflecting the opinion of a considerable number, one president states: "The proportion of men in college at the present time so afflicted (with a venereal disease) is an almost negligible quantity as against conditions in my own time in college, when there was hardly any group within the college in which there could not be found men so afflicted." According to these presidents, the principal causes of improvement have been health education and the suppression of the liquor traffic and prostitution.

The Children's Diseases.—In infancy, sickness and death are due largely to the diseases of the intestines and stomach, and to the acute respiratory diseases, the underlying conditions being heat with high humidity and un-

favorable methods of feeding. Infection, too, becomes a greater danger during the summer when flies are prevalent. It is virtually impossible for many parents, because of their economic status, to remove their babies from the large cities during the hottest weeks of the summer, but hygiene, especially proper feeding, prevents, even in hot weather much sickness and a large proportion of deaths.

In childhood, the chief diseases are the familiar infections—diphtheria, scarlet fever, measles, and whooping cough. These, together with infantile paralysis, blindness, and cardiac disease, will be discussed briefly.

*Diphtheria*²⁷ has come down from antiquity under such names as "Egyptian sore throat," "Syrian ulcer," "gangrenous ulcer," and similar terms. It is now sometimes called membranous croup. Few diseases have caused such high mortality as has diphtheria. An outbreak has terrorized whole communities, and in the old records are many instances where all the children have been swept away by the scourge. The scientific work of Klebs in 1883, and of Loeffler, Behring, and others later, showed definitely that the disease is caused by the *bacillus diphtheriæ*, that immunity may be ascertained by a specific process now known as the Schick test, and that antitoxin if administered sufficiently early will bring about cure. In many instances a toxin-antitoxin assures prevention, especially among children; but it does not become effective for two or more weeks, and so cannot be relied upon in an epidemic.

One of the great triumphs of scientific medicine has been the development of diphtheria antitoxin. When a horse is injected with slowly increasing doses of diphtheria toxin made in a laboratory, the animal gradually becomes immune to its effects by the development of an antidote or antitoxin manufactured by the animal's body. This antitoxin renders powerless the injected toxin. The antitoxin is produced so profusely that the blood is full of it; and when this blood is drawn from the animal and allowed to clot, it is possible

to draw off a clear serum containing antitoxin. This serum, if injected into the human body in doses of proper strength early in the course of the disease, will combine with the diphtheria toxin, and will usually neutralize it and hasten recovery. The United States Public Health Service inspects all antitoxins and toxin-antitoxins made in commercial laboratories doing an interstate business, as well as the

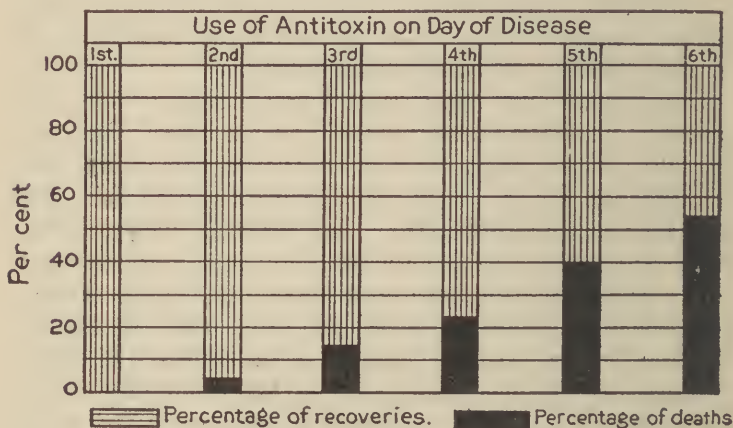


FIG. 29.—PERCENTAGES OF RECOVERIES FROM DIPHTHERIA WHEN ANTITOXIN IS ADMINISTERED ON VARIOUS DAYS IN THE COURSE OF THE DISEASE.

Prepared by Schereschewsky on data of Kolle and Hetsch.

establishments themselves, so that the general public may be assured of the purity and strength of these important products. These laboratories manufacture most of the output; there is little demand for products of this kind not tested by the Public Health Service.

The introduction of anti-diphtheria measures into the United States, and the more extensive application of them than has hitherto been practiced in any country, are due to the enterprise of Hermann M. Biggs and to the work of



SCIENTISTS IN THE HYGIENIC LABORATORY OF THE UNITED STATES PUBLIC HEALTH SERVICE
TESTING THE PURITY AND POTENCY OF A DRUG

The Hygienic Laboratory maintains a personnel of approximately 120 and is constantly at work testing vaccines, serums, and other drugs, and developing new measures for the control of the diseases of man. (See also page 214.)

William H. Park and his collaborators in the laboratory of the New York City Department of Health. Their studies have brought definite knowledge regarding the value of antitoxin (see Figure 29) and remarkably important information concerning the susceptibility of children (see Figure 30).²⁸ Figure 31 on the following page shows that in Massachusetts the mortality from diphtheria has been greatly reduced during recent years.²⁹ In a general

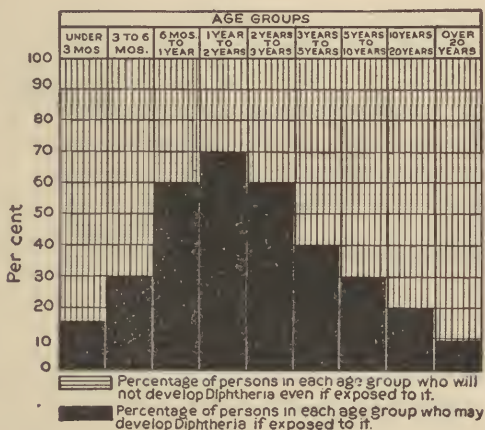


FIG. 30.—PERCENTAGES OF PERSONS IN VARIOUS AGE GROUPS WHO WILL NOT AND WHO MAY DEVELOP DIPHTHERIA IF EXPOSED TO IT.

way this decline, due largely to the use of antitoxin, is typical of progress throughout the country. The diphtheria death rate in 1920 for the registration area of the United States was 15.3 per annum per 100,000 population.³⁰ Upon the adoption of such educational measures as will bring about the prompt application of antitoxin whenever the disease is suspected, will depend the usefulness of its discovery.

Although the *scarlet fever* death rate³¹ has also declined rapidly, it is questionable whether there has been so marked

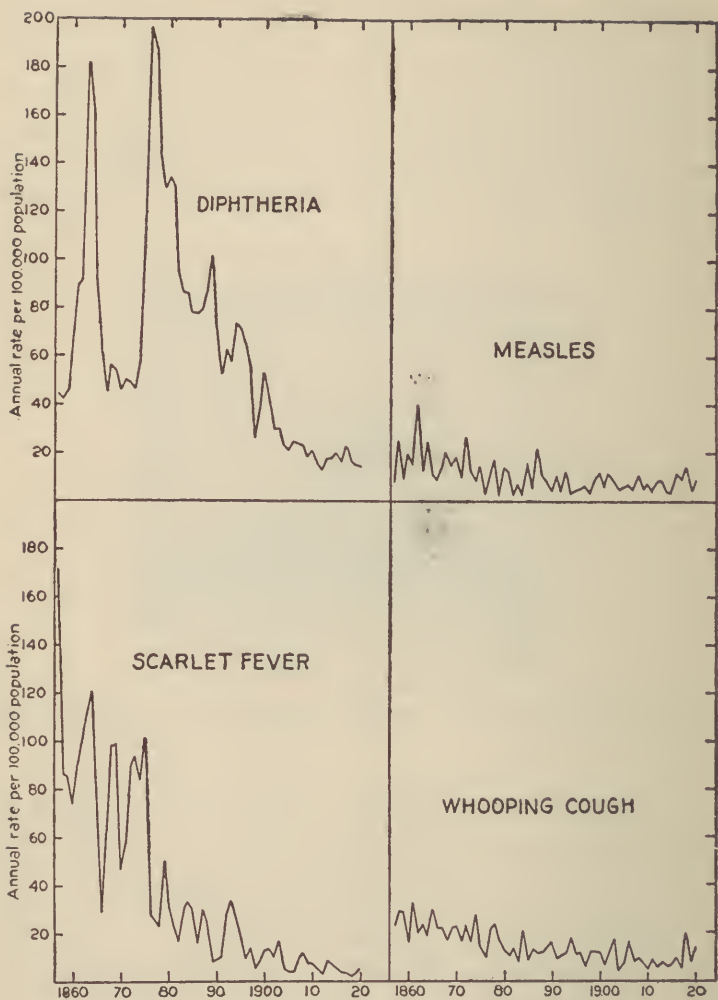


FIG. 31.—MORTALITY FROM PRINCIPAL CHILDREN'S DISEASES, IN MASSACHUSETTS, BY YEARS, 1857-1920.

a decrease in the morbidity due to this disease. Considering that the cause of scarlet fever is not known, and that there is no serum for its prevention, it is an interesting phenomenon that the death rate has dropped so remarkably as the accompanying graph reveals. This lower rate is probably due to the fact that in recent years the disease has been distinctly milder than formerly, and that isolation has been more strictly practiced than between 1860 and 1880, when the mortality was high.

The slight drop to be observed in the death rate for *measles*³² (see Figure 31) is probably due to better treatment and early isolation; it is generally believed that there has been no decrease in the morbidity rate. Measles is a serious infectious disease, killing approximately 10,000 children per year—more than are destroyed by smallpox.

Although a bacillus has been found which is presumably responsible for *whooping cough*,³³ little else has been done toward its prevention, and the disease is probably as prevalent now as it has been for many years. There has been a slight decline in the death rate, but even now whooping cough kills more persons than does scarlet fever.

The large proportion of deaths and the complications in childhood and later life due to these four diseases justify their classification as infections of first importance. They still constitute a serious public health problem. With the exception of diphtheria, but little progress has been made in their control. It is known that measles is not infectious during the scaling period, and some persons think that this is probably true of scarlet fever also. All four diseases, however, are transmitted during the sneezing and coughing stage. Therefore, those hygienic measures which tend to prevent the spread of colds are especially important in preventing the spread of these diseases. It is of great importance that the people generally be taught to hold a hand or handkerchief to the face when coughing or sneezing. The Chicago Department of Health has made special efforts in

this direction. Through its press service, placards in street cars, and its own bulletins, warnings have been issued. "You would no doubt resent it if anybody in the street car would deliberately slap you in the face," says Emil Amberg in an address quoted by one of the Department's Bulletins, "yet that is a very innocent offense compared with the damage which he might cause you by coughing or sneezing in your face."³⁴ The admonition "Do not spit in public places" was effective; it must be followed by a similar nation-wide campaign, warning the people against the uncovered sneeze and cough. It is of prime importance to continue research work, in the hope that sanitarians may be able to deal with measles, scarlet fever, and whooping cough as they are now able to deal with diphtheria. Until science more definitely points the way to their prevention, these diseases will remain important causes of death and sickness in childhood.

Malnutrition.—During recent years malnutrition among school children has been the subject of a considerable number of studies. Many persons have participated in the weighing of children, some perhaps who have not been qualified to diagnose their condition. A considerable number of somewhat alarming statements have been made by persons and agencies thus engaged which are probably not entirely justified by the facts.

Thomas D. Wood, of Columbia University, has compiled height and weight tables; and the Child Health Organization, which published them, estimates³⁵ that any child falling 10 per cent below the specified weight for his height and age is undernourished. If a child remains for weeks and months 7 per cent or more under weight for his height, W. R. P. Emerson believes that he is definitely a malnourished child with pathological signs, and as such he may be classed as sick. Large numbers of children of school and pre-school age in the United States have been tested according to these standards, with the result that 20 to 40

per cent have been variously judged to be suffering from "malnutrition."³⁶ The Children's Bureau, during "the children's year," which it promoted, was instrumental in bringing about the examination of a large number of children.

Such estimates have been criticized by certain writers,³⁷ one of them making a rather vigorous attack on what he calls the "under-weight delusion." The question is not what does the child weigh, he says, but is it healthy; and its health is to be determined not by a pair of scales, he adds, but by a proper medical examination. To attempt to fatten a child who is constitutionally slender and yet appears to be perfectly healthy, suggests another critic, is both unnecessary and unwise. If the attempt is successful, it may be harmful to the child physically; if it is unsuccessful, it may greatly discourage him. Racial and hereditary tendencies evidently have not been sufficiently taken into account by many persons working in this field. The Public Health Service, in studying the results of the examination of 9,973 school children, found that some children whose nutrition was "excellent," in the judgment of the physician, weighed less for their height and age than other children of "poor" nutrition.³⁸ S. Josephine Baker and J. L. Blumenthal have reported the examination of 1,814 school children,³⁵ the nutrition of each child being judged, first, by a physical examination, second, by the tables prepared by Wood, and, third, by the Pirquet method. The physical examination by a physician showed that 25 per cent were suffering from malnutrition, while according to Wood's tables, 22.2 per cent were so affected. Apparently the thorough examination has two advantages. It does not classify as undernourished the slender, wiry child who shows no evidences of ill health, but, on the other hand, it discovers some cases of undernourishment which are not revealed by the height-weight tables.

The Public Health Service and other agencies are attempting to establish standards by which the health of chil-

dren may be judged. The Service believes that, while weight in relation to height, age, and sex should be considered in judging the health of a child, it alone is an inadequate index.³⁹

While there may be great differences of opinion regarding the prevalence of malnutrition, there is little doubt regarding its seriousness when it actually exists. It results in lassitude, in a low grade of school work and, probably, in susceptibility to some of the more serious diseases. Its physical signs may include pallor, mouth breathing, "fatigue posture," lateral curvature, lines under the eyes, and protruding abdomen.

What appear to be the chief causes of malnutrition? It is due to faulty health habits, particularly of diet, sometimes accompanied by physical defects. To ascertain the primary cause may be difficult. All that may be said, perhaps, is that often both dietary faults and physical defects are found accompanying malnutrition, and when this is the situation, each should be immediately remedied. A child may have a sufficient quantity of food, and yet, if the diet is not properly balanced or if his metabolism for any reason is faulty, he may suffer from malnutrition. Among 4,076 children attending nutrition clinics in 18 cities in Missouri,⁴⁰ the physical defects and faulty dietary habits were observed to be as follows:

	<i>No. of children</i>	<i>Percent- age of children</i>
<i>Physical defects related to nutrition</i>		
Mouth breathing	1,085	27
Defective tonsils	1,567	38
Adenoids	553	14
Defective teeth	2,229	55
Pale color	1,758	43
Fatigue posture, including winged scapulæ..	2,516	62
<i>Dietary faults</i>		
Use of coffee.....	711	17
Inadequate milk	1,270	31
Excessive use of meat.....	648	16
Excessive use of sugar.....	518	13

The results of various studies made of school children may be discounted for misinterpretation of examination results; still, a large proportion would probably be found suffering definitely from an abnormal condition called malnutrition. Such sick children are discovered among the poor and among the rich. The dietary faults which are responsible for a large proportion of cases are due both to ignorance in regard to proper feeding and to insufficient funds with which to buy the right kind of food.

Infantile Paralysis * (poliomyelitis) deserves special attention because apparently it has been increasing in prevalence. From 1905-09, there were only 5,514 cases reported in the United States.⁴¹ During the next five years, the disease became epidemic. There were over 18,000 cases during this period, and in 1915 and 1916, when the epidemic appeared to reach its height, 31,500 cases for these two years alone. The disease has been difficult to diagnose. The apparent increase may be due partially to improved methods of diagnosis. Since 1915 there have been relatively few new cases, but thousands of crippled children have been left. To-day in the United States there are approximately 100,000 sufferers from the crippling effects of this disease.⁴²

The prevention of future epidemics and the care of those who have become crippled constitute a public health problem of considerable magnitude. Hygienic measures appear to have no effect upon its spread. Victor C. Vaughan believes that the virus is transported by persons in apparent health.⁴³ There are other theories, but no general agreement among scientists as to the mode of transmission. E. C. Rosenow, of the Mayo Clinic, has a serum for the treatment of infantile paralysis, but in 1923 it had not been generally accepted. A Harvard medical commission has been making a five-year study into the causes and treatment of this

* Infantile paralysis is included in this chapter because it is a children's disease. It should be considered also among those diseases not yet attacked, discussed in the next chapter.

disease; it has had 2,000 actual cases under its supervision. That only about 50 per cent of cases are paralytic, appears to have been established by the commission. Its members believe they have found a method of after-treatment based on "muscle training, though even under the most favorable conditions, progress is likely to be slow."⁴² Until science is able to make more definite discoveries regarding this infection, the nation will be well nigh helpless when another epidemic develops.

Blindness among Children causes much unnecessary suffering. At the time of the 1920 census, there were 52,567 registered blind persons in the United States.⁴⁴ Of about 36,000 cases, the cause of which has been reported to the Bureau of the Census, only 3.3 per cent were reported blind as a result of ophthalmia neonatorum (a type of blindness due in most or all cases to the germs of gonorrhea)—a much lower percentage than various early estimates. This infection can almost always be prevented by the use of a silver solution applied to the eyes of the child at the time of birth.

Recent efforts to prevent blindness in babies have brought most gratifying results. Only one child has been reported blinded from ophthalmia neonatorum during the past several years in Wisconsin; and in Massachusetts, insofar as the State Department of Health has been informed, there has not been a case of blindness resulting from ophthalmia neonatorum since 1917 that is now alive. Success has been due largely to educational measures, the distribution of the prophylactic silver solution, and to legislation. Forty-six states had laws, January, 1922, pertaining to infantile blindness.⁴⁵

In various school surveys it has been found that at least one per cent of elementary school children have serious *cardiac affections*. Therefore, there are probably at least 200,000 children with hearts requiring systematic, skilled medical supervision. This situation offers a great opportu-

nity for checking heart disease mortality in later life.⁴⁶ As will be observed later, considerable work is now being done in the development of cardiac clinics and other facilities for the prevention and cure of heart defects.*

Remedial Measures.—As a measure for the prevention of general ill health in children and the development of more serious disorders in later life, the removal of tonsils and adenoids is being increasingly employed. The effect of tonsillectomy upon the general health of 5,000 children has recently been studied, and the conclusion reached that considerable improvement in the child's general health was brought about among those children who presented evidence of infection from the tonsil though not of hypertrophied or enlarged tonsils; but no marked change was observed in the child's general condition among those operated on for hypertrophy only.⁴⁷

Modern programs of combating the diseases which afflict and destroy children include prenatal clinics, the instruction of expectant mothers in their homes, the regulation of the employment of such mothers engaged in industry, lying-in facilities, registration of all births, infant welfare stations, the instruction of mothers in the home regarding the care of babies, the safeguarding of public milk supplies, laws for the prevention of infant blindness, pre-school clinics, physical and medical examination of children in schools with provision for the remedying of defects, physical education, institutional care and medical supervision of dependent children, child labor laws based on physiological principles, and the medical supervision of children in industries.⁴⁸

These various measures are being promoted by state and local boards of health, federal health agencies, and private health and social organizations. The program for the development of maternal and infant hygiene made possible by the passage of the Sheppard-Towner Bill in 1921 deserves particular attention. This work is administered through

* See pages 249 and 291.

the state departments of health by the Children's Bureau, with the aid of the Public Health Service and the Bureau of Education.

The Public Health Service and the Children's Bureau have made important studies in child hygiene. In the promotion of school hygiene, a subject to be discussed later, the Bureau of Education is doing important work. State and local boards of health, as will be seen in a following chapter, are now giving considerable emphasis to child hygiene.

The chief private agency in this field is the American Child Health Association, the result of an amalgamation in 1922 of the American Child Hygiene Association and the Child Health Organization of America. These two bodies have been active in focusing public opinion on the importance of child hygiene, through meetings, newspaper publicity, authoritative magazine articles of a popular nature, and similar measures. Advice and assistance through letters have been sent to parents, teachers, physicians and nurses regarding the care of children; many helpful publications have been issued for the use of schools, and aid has been given to the good work of the health fairy and "Cho-cho" the health clown, who appeared in 1921 at over 1,000 health entertainments. The Association's posters are especially effective. The new organization will continue the publication of the magazine, *The Mother and Child*.

The National Committee for the Prevention of Blindness distributes circulars, makes available the latest authentic information relative to the prevention of blindness, maintains a special library, publishes news regarding blindness prevention, and promotes helpful legislation.

The International Society for Crippled Children, recently organized and composed of members of Rotary Clubs, is doing admirable work among crippled children. It started in Ohio, where nine centers have been established. Each center includes hospital facilities, a weekly clinic, a follow-up system, and one or more schools for crippled children. The



ONE OF THE CHILDREN IN THE SCOTTISH RITE HOSPITAL FOR CRIPPLED CHILDREN AT
ATLANTA, GEORGIA, BEFORE AND DURING TREATMENT

Rotarians of Ohio tax themselves \$4 a year for their own work among the children in Ohio, and 50 cents a year to extend the work of the International Society. The Ancient Arabic Order of Mystic Shriners has also attacked the problem of crippled children. Through the levy of annual assessments, two million dollars has been made available for the year 1923 to use in the building of orthopedic hospitals for children; and thereafter one million dollars per year is to be provided. It is to be expended under the guidance of an advisory board of orthopedic surgeons.⁴⁹

Mental Diseases.—The mental diseases include the psychoses, usually spoken of as forms of insanity, and the psycho-neuroses, comprising those disorders often spoken of as the "functional nervous diseases" (anxiety states, neurasthenia, hysteria and similar disorders) as well as various faulty adaptations to environment. There is no sharp line of demarcation between mental health and mental disease, and in both groups of disease there are all gradations.

In the mental disease hospitals of the United States on January 1, 1920, there were 232,680 patients.⁵⁰ In addition, there were a considerable number who should have been receiving hospital treatment but were not. If all states provided as thoroughly for their mentally diseased population as do Massachusetts and New York, there would be 350,000 in such hospitals,⁵⁰ and this number would not include many thousands of cases of psycho-neuroses. Of the 817,000 beds in the hospitals of the United States, over 295,000 are in sanitariums for nervous and mental diseases.⁵¹ Interest in mental hygiene during recent years has brought to light an increased number of cases of mental illness. There is probably not only an apparent rise in prevalence, but an actual increase due to the stress and strain of modern life, especially to disturbances incident to the World War.

The care of only 199,000 inmates of subsidized institutions in 1915 cost over \$36,000,000; ⁵² therefore the cost of caring for the patients of all mental disease hospitals to-day

would surely be not less than \$60,000,000 per year. The National Committee for Mental Hygiene says that "the economic loss to the United States each year on account of mental diseases is over \$200,000,000." ⁵³

Syphilis is responsible for over 14 per cent of the male first admissions to mental disease hospitals; ⁵⁴ and alcohol for about 4 per cent of first admissions. ⁵⁵ General paresis (a psychosis due to syphilis) is probably the cause of one thirtieth of all deaths among males 40 to 60 years of age. ⁵⁶ Many cases of the various psychoses are transmitted through heredity. Immigration, unemployment, congestion of population and child labor also appear to have an influence on the prevalence of mental disease.

The prevention of mental disorders includes, among other measures, the reduction of syphilis and alcoholism; also the development of mental hygiene among those who are especially susceptible to stress and strain. It is especially important that further study be made of the heredity of mental diseases, so that this aspect of the problem may be dealt with more intelligently.

Feeble-mindedness, strictly speaking, is not a disease. It represents merely a lack of mental development, and includes three grades of inferior minded persons—the moron, the imbecile and the idiot. Feeble-mindedness is important in public health work because a large proportion of those who are foci of infection for syphilis and gonorrhea (prostitutes) are feeble-minded girls and women. Moreover, feeble-mindedness contributes greatly to crime and poverty—27 to 30 per cent of the inmates of various state prisons, 28½ per cent of drug users in the Boston Criminal Court, and 40 per cent of the inmates of Georgia almshouses, for instance, have been found upon investigation to be feeble-minded. ⁵⁷ On the other hand, feeble-minded persons who have been examined and found to have no delinquent tendencies may become, if placed in proper occupations and subjected to intelligent community supervision, useful members of society.

There is reason to believe, according to Rosenau, that there are no less than four mentally defective persons in every thousand of the population. If this is true, there are in the country, in addition to those suffering with the psychoses and psycho-neuroses, over 400,000 feeble-minded persons. Thomas D. Wood of Columbia University believes that at least one per cent of the school children of the country are "mentally defective."⁵⁸ Heredity is probably responsible according to the National Committee for Mental Hygiene,⁵⁷ for two thirds of the cases of feeble-mindedness. It seems important, therefore, to prevent the marriage of feeble-minded persons. They are especially prolific, and when a feeble-minded man marries a feeble-minded woman, their offspring are almost certain to be defective. Feeble-mindedness, moreover, is not curable. Permanent institutional care, including the prevention of marriage, is the surest way to prevent its growth. Another effective measure would be the more careful control of the admission into the United States of foreign-born feeble-minded persons. Sterilization has been proposed. It is also believed that the lives of feeble-minded persons may be so supervised outside of institutions as to prevent them from becoming criminals, prostitutes, and paupers. Some students question the desirability of preventing the propagation of high-grade morons. Since much of the menial work of the world is done by such persons, these students ask whether they are not essential to the maintenance of our present economic order.

Millions of dollars are needlessly being spent every year in handling the results of feeble-mindedness. It would be economical, therefore, to study the problem more systematically and provide measures for its prevention, even though the expenditure of relatively large sums of money is at first necessary.

Mental Hygiene.—The application of the preventive measures already suggested may be made possible through the extension of mental hygiene, particularly to the mental

hygiene of childhood. Effective effort here will do much to prevent mental disorders and those unhealthy states of mind which tend to produce functional disorders of the body. William A. White⁵⁹ says of the importance of mental hygiene:

What particular use is the healthy body, which the sanitarian is aiming to insure, if it does not have a reasonably healthy mind to guide and direct it? The body is only an instrument to bring to pass the ideals, the ideas, the aims and objects which our minds formulate, and unless our minds can formulate reasonable aims and objects, our healthy bodies are not very much good. I know many idiots who have perfectly healthy bodies, and many individuals with very wonderful minds who have very delicate bodies.

Every life, as Spencer defines it, is a continuous adjustment to its outer and inner relations. It would seem that in the past the work of the sanitarian has been confined very largely to what might be called outer relations, and that the time is now coming when the inner relations might be inquired into.

The neglect of mental hygiene by the majority of physicians has been one cause of the growth of drugless healing by laymen. A few physicians treat functional disorders by suggestion when the diagnosis appears to call for such treatment, but apparently the field has been left almost entirely to Christian Scientists * and to other drugless healers, many of whom appear to have brought about remarkable cures.

M. Emile Coué, of Nancy, France, exponent of auto-suggestion,⁶⁰ made a visit to the United States in January, 1923. For months his marvelous cures had been heralded through the press. Many alert newspapers published series of articles by him or about him. In *The Bookman's March*, 1923, list of most popular books (prepared in co-operation with the American Library Association), Coué's *Self-Mastery through Auto-Suggestion* ranked first among non-fiction volumes (and this was only one of the two books on his

* This subject is discussed in Chapter X, page 199.

work then being sold). In New York, Coué's managers were besieged for interviews. In Washington an avalanche of letters requested reservations for his first public lecture in January. It required three clerks to handle this mail.

There have been many criticisms of Coué's work, especially of his published testimonials of cures of heart disease, tuberculosis, paralysis, club foot and numerous other organic diseases. There are various dangers associated with the use of auto-suggestion, especially when the patient has an organic disorder requiring medical attention. But Coué has made an earnest, although possibly at times a misguided, effort to help the sick, and apparently has brought temporary and even permanent relief to many sufferers.

Through the laying on of hands or through prayer, many persons have apparently been cured of functional disorders.⁶¹ At the shrines in Lourdes (France) and St. Anne de Beaupré (Canada), one may see with one's own eyes, near the altar, the crutches of those who have come as cripples and have departed well. In Boston, a few years ago, a healer named Hickson attracted great throngs of people. According to a statement credited to Hickson "God can heal cancer as well as he can heal a headache; many so-called organic diseases have been healed through prayer." Obviously unjustified as this claim may be, Hickson, through suggestion, probably at least relieved for the time being many persons suffering from functional diseases.

The Emmanuel Movement,⁶² under the leadership of Doctor Worcester, a distinguished preacher of the Episcopal Church, was an attempt in psychotherapy. To give further study to drugless healing, a commission was appointed at the 1922 convention of the Episcopal Church in Portland, Oregon. This convention recognized that "special gifts" of healing exist, authorized such clergy as their bishop might approve to practice drugless healing, and provided for the inclusion of three physicians on the commission.

Thomas W. Salmon, while believing that treatment by

suggestion as conducted by unscientific persons is fraught with danger, advocates the use of positive mental hygiene by those scientifically trained. "It is apparent," he says,^{62a} "that there is a *positive* mental hygiene, the beneficiaries of which will be persons with no special hereditary handicap or under no specific stress who, nevertheless, can greatly increase their happiness and usefulness by better understanding of their emotional lives and better utilization of the mental resources with which they are endowed. The unending conflict between the demands of instinctive life and the requirements of Society has its casualties by the hundreds of thousands and many of these casualties cannot accurately be named by the designations of the psychoses or psychoneuroses. They appear as strange mental attitudes, wide emotional alternations, fixed ideas on subjects that have a strong emotional coloring and, especially in children, in conduct that is unexplainable by any method of study except the psychological one. This is obviously as proper a field for mental hygiene as the protection of the central nervous system from more or less mechanical damage and it is a field that is already commencing to yield rich results. Many of the situations that arise in this field are profoundly affected by the social environment in which we live and work and no art of mental hygiene can hope to meet its opportunities unless it takes into account the mental factors that lie within the field of social work."

The National Committee for Mental Hygiene,⁶³ is an organization controlled by physicians and other scientific persons. It was founded in 1917 and has been a pioneer in arousing interest in the importance of this field of public health work. Its activities have included the preparation of a summary of laws regarding the care and commitment of mentally diseased persons, also the accumulation of data regarding mental disease clinics and other facilities for the early recognition, treatment and prevention of mental disorders. It has also encouraged the teaching of psychiatry.

A central library has been established on mental hygiene and allied subjects. Especially useful have been the surveys conducted by the Committee of over thirty states and many cities to determine the number of mentally diseased and mentally defective persons, their general condition, their care and their treatment. Recently the Committee established a Division on the Prevention of Delinquency. The Statistical Division has set up a system of uniform statistics in over 105 of the 157 mental disease hospitals of the United States. An international mental hygiene organization has been fostered by the Committee. Through the Neuro-Psychiatric Division of the Medical Corps of the Army, created with the assistance of the Committee, work of far-reaching importance was carried on during the war, work which has made possible conspicuous progress in the treatment and prevention of mental diseases. An exhibit has been utilized, pamphlets have been distributed, and, since January, 1917, the Committee has published a quarterly magazine, *Mental Hygiene*.

Cancer.⁶⁴—Up to July, 1919, there were killed or there died of diseases or wounds in the Great War, 76,433 United States soldiers; but 180,000 persons, it is estimated, died of cancer in the United States during the two years covered by our participation in the war and the months immediately following. Cancer causes one out of every 10 deaths after the age of forty. It does not appear among the ten most serious disabling diseases in any of the five studies described in an earlier chapter, but it was responsible in 1920 for 6.4 per cent of all deaths. Of all deaths from cancer, 95 per cent occur after 35. It is more prevalent among women than among men. (See Figure 32.)⁶⁵ It is usually stated that cancer is not inherited; but important evidence has recently been offered indicating a probability that the heredity factor (at least among experimental animals) plays a part in the occurrence of cancer.

The trend of the cancer death rate is upward. The esti-

mated number of deaths for 1920 was 89,000; for 1921, 93,000.⁶⁶ The rise may be partially due to improved diagnosis and reporting, also to the prevention of other diseases, resulting in the lengthening of life until the age of high cancer prevalence is reached. These influences may or may not be sufficient to account for the increase in the number of deaths.*

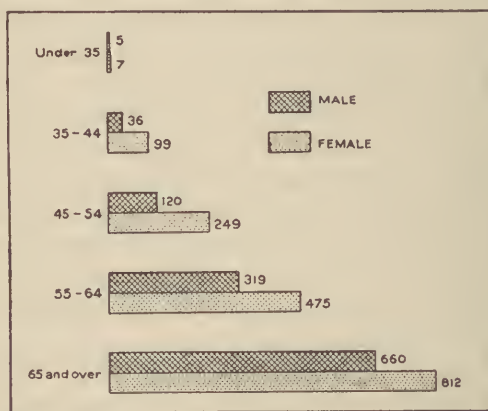


FIG. 32.—MEAN ANNUAL MORTALITY FROM CANCER IN THE TWO SEXES AT DIFFERENT AGES, REGISTRATION AREA, 1915-1919. RATES PER 100,000.

Adapted from a graph issued by the Prudential Insurance Co. of America.

Cancer is curable if competent treatment is applied in the early stages. An effort is being made, therefore, to inform people, especially women, regarding the disease. Cancer begins with a small local growth which can usually be safely and easily removed. Sores, lumps, cracks, and similar defects of the skin which do not heal are danger signs and should be examined by physicians. Continued indigestion among those in middle life, with loss of weight and change of color, may indicate cancer of some internal organ and

* See Appendix 2 (page 441) for cancer mortality rates by states.

should be investigated. Procrastination is often fatal. It has been found that, on the average, there is a delay of six to twelve months after some symptom is noticed before a physician is consulted. The chief aim of the campaign against cancer is to prevent this delay and bring about immediate consultation with a physician.

One of the first concerted efforts against cancer was made in 1905 when the American Medical Association advocated educational work regarding the disease, and organized its Council on Health and Public Instruction. In 1912, the Clinical Congress of Surgeons of North America appointed a cancer campaign committee, and secured the publication of articles on the subject in several popular magazines. Following a meeting of the American Gynecological Society in 1913 at Washington, there was organized the American Society for the Control of Cancer, which has been responsible for most of the educational work in this field.

This society furnishes articles on cancer to state and city boards of health, and scientific data are sent to medical societies. Efforts are made to instruct nurses and social service workers and to equip them to advise people generally, especially women, regarding the prevention of cancer. Speakers also are furnished for lectures under the auspices of women's clubs, churches, and various civic organizations. Largely as a result of the efforts of the Society, the Director of the Census of the federal government ordered the publication of a special report of the cancer mortality of 1914. A "National Cancer Week" was conducted in the fall of 1921 and again in November, 1922, under the auspices of the Society and its state and local committees. It is estimated by the Society that fully one half of the adult population of the country in 1922 received through lectures, motion pictures, newspaper and magazine publicity, and letters read in churches and before various audiences, some information with reference to the symptoms and control of this malady. About 5,000,000 pieces of literature were distributed, and a

generous amount of co-operation was rendered by boards of health, medical societies, insurance companies, women's clubs, labor organizations, and all kinds of civic, public health, and welfare agencies.⁶⁷

Malaria.⁶⁸—This malady has been for years one of the most prevalent of all preventable diseases. It is a scourge of the tropics. Laveran discovered, in 1880, the micro-organism of the disease, the *plasmodium malariae*, and important additional knowledge regarding it was contributed five years later by Golgi. Three types of the parasite are now recognized. The discovery of its transmission by the anopheles mosquito is one of the most brilliant achievements in sanitary science. The breeding places of this mosquito are swamps, pools, and grassy edges of running water; there the eggs hatch into larvæ, which in time turn into pupæ, and then into mosquitoes. The female anopheles, when biting an infected person, sucks blood containing malarial parasites, the offspring of which she may transmit, a week or more later, to other persons whom she bites. Nearly 2,000 years ago this means of transmission was suggested; in fact, some savage tribes in Africa called the disease the "mosquito disease." The theory was advocated by King in 1882; and, inspired by the subsequent work of Laveran and Manson, Ross in 1895 made researches which, together with later discoveries, led to the final establishment of mosquito control as a sure means of preventing the scourge.

Malaria has been prevalent in the United States for many years, especially in the Southern States, where Rosenau estimates there are probably a million cases each year, with carriers far outnumbering the cases. It probably affects a larger proportion of persons living in rural communities than those residing in cities, causing more injury in some sections than all other diseases combined.

The prevention of malaria may be brought about, first, by draining or filling up pools, marshes, and other bodies of water, by oiling such places for the purpose of eradicating

the anopheles mosquito, and by using fish which eat the mosquito larvæ; second, by screening houses and beds so that infected mosquitoes cannot bite well persons; and third, by keeping infected persons screened and by treating them with quinine until they are *completely* cured (thus preventing the transmission of the disease from persons who may still have the parasites in their blood).⁶⁹ Some students believe that the administration of quinine in small doses

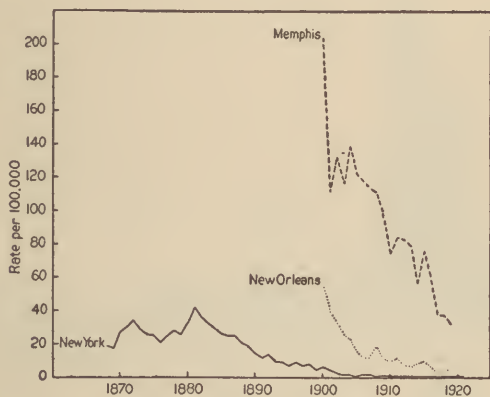


FIG. 33.—MORTALITY RATES FROM MALARIA IN THREE CITIES, BY YEARS.

during the malaria season will protect healthy persons against infected mosquitoes.

The records of New York City, New Orleans, and Memphis, to be observed on the accompanying diagram (Figure 33), show a marked decrease in the mortality from malaria.⁷⁰ These trends may be due partially to the building up of these cities, particularly in the case of New York, and to the consequent filling in of swampy land and to similar improvements, made without reference to their effect on malaria.

In recent years, measures to combat the disease have been inaugurated by state departments of health, the International Health Board, and the United States Public Health Service. New demonstrations were undertaken during 1921 in 26 localities and continued in 35 places.⁷¹ Substantial reductions in the prevalence of the disease were brought about at an average annual per capita cost of \$1.01. Reductions

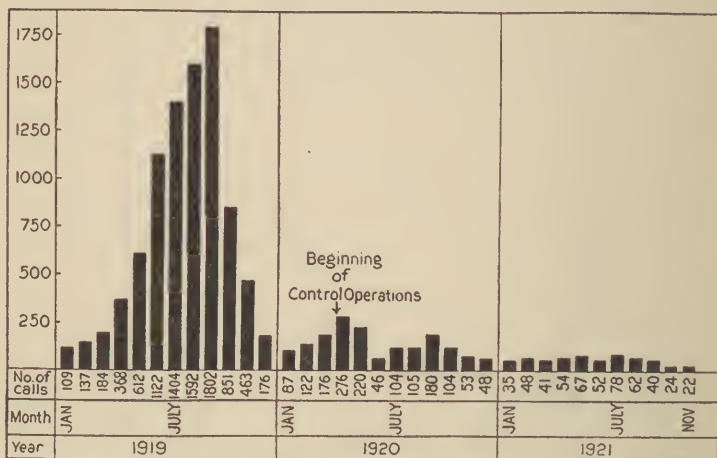


FIG. 34.—REDUCTION IN THE NUMBER OF CALLS MADE BY PHYSICIANS UPON MALARIA PATIENTS, DUE TO MALARIA CONTROL MEASURES, IN TWO TEXAS TOWNS.

From the 1921 Annual Report of The Rockefeller Foundation.

achieved in other communities by earlier demonstrations were maintained at an average cost of 25 cents per capita. Figure 34 shows the remarkable results of malarial control work in two Texas cities. An idea of the present seriousness of the disease in various states may be gained by an examination of the accompanying chart (Figure 35).⁷²

Hookworm Disease.—Morbidity statistics have been so inadequately developed that this disease has not appeared among the statistical data submitted in earlier chapters, but

it is a major cause of inefficiency and ill health. Hookworm disease is insidious in its progress. A family may be healthy, industrious, and prosperous, the children at the head of their classes in school, then gradually, without apparent cause, all members of the family become pale and puny, with ribs and shoulder blades gradually becoming conspicuous, even the abdomen, face, and legs becoming swollen as among famine-stricken people. The whole family seemingly becomes lazy and inefficient and it soon drifts into

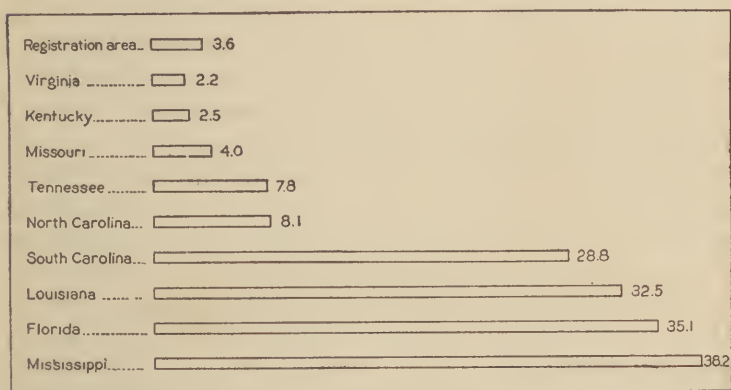


FIG. 35.—MORTALITY FROM MALARIA IN SOUTHERN REGISTRATION STATES, 1920. RATES PER 100,000.

debt; the children lose their ambition and alertness of mind and drop out of school. The mortality rate for hookworm disease is not high, but by steadily sapping the strength of millions of persons, it causes widespread misery and has taken high rank among the diseases which afflict mankind.

Hookworm disease is similar to tuberculosis in one respect—in each case, important scientific discoveries have been made, but the application of economic and sociological measures essential to eradication has not been adequate.

The disease is prevalent in tropical and subtropical cli-

mates throughout the world. It existed in one form during ancient times, and was identical with Egyptian chlorosis. In the southern two thirds of China, it was found among 75 per cent of the population.⁷³ The disease was probably introduced to the Western hemisphere by slaves brought to Porto Rico in 1760.⁷⁴ In 1904, it was found that 90 per cent of the rural population of this island were infected. C. W. Stiles, of the United States Public Health Service, some years ago, estimated that there were in this country south of the Potomac and east of the Mississippi two million infected individuals. More than 415,000 children in 413 counties of the South were examined between 1910 and 1913, and over 43 per cent were found to be infected.⁷⁴

Hookworm disease is caused by a worm about one half inch long and as large around as a wire hairpin. In some few cases the embryos are taken into the body by the drinking water or the eating of contaminated food; but in about 90 per cent of all cases, the parasite enters the body by piercing the skin, particularly the skin of the feet. The disease is, therefore, more prevalent where people go barefoot. In Colombia a survey showed an incidence of 39 per cent among persons usually wearing shoes and an incidence of over 81 per cent among those not doing so.⁷⁵ After gaining access to the blood stream, the larvæ of the worm travel to the right heart. From the heart they are carried in the blood to the lungs, piercing the capillary walls and passing up the bronchi to the throat; they are then swallowed and pass to the small intestines, where they continue their metamorphosis. In the small intestines, the larvæ attach themselves to the mucous membrane and develop into adult worms. The hookworm consumes large amounts of blood, the wound continuing to bleed after the worm releases its hold.

The female adult lays large quantities of eggs, which are discharged in the excrement, and thus the infection is spread. The disease is particularly prevalent in the rural districts of

the South, where there is a lack of proper sanitation. Modern toilets are rare; in some districts 50 per cent of the homes are without privies.

It was Looss who discovered in Cairo, Egypt, that hookworm disease is usually contracted through the skin. He ascertained the course of the parasite through the human body. This discovery is one of the most noteworthy in preventive medicine, and has enabled sanitarians to develop an effective campaign of eradication. In the United States, interest in the disease and efforts towards its eradication have been due largely to the work and enthusiasm of Stiles.

The control of hookworm disease consists in two extremely simple measures: (1) providing sanitary privies and getting them used, and (2) treating infected persons through the use of thymol or other remedy which rids the intestines of the parasite. Recently, Maurice C. Hall, of the United States Department of Agriculture, discovered that carbon tetrachloride could be used successfully in the elimination of hookworms from infected animals. Very recently it has been used with success in treating human beings.

Seeing in the problem of hookworm disease not only an opportunity to combat a malady responsible for much morbidity, but also a chance to arouse interest in public health among the people generally and to bring about the adoption of measures effective in reducing the incidence of other diseases, the Rockefeller Sanitary Commission and, later, the International Health Board have given special attention to this problem for twelve years or more. Co-operation was developed with twelve Southern states through the appropriation of funds for demonstration purposes, the state and county sharing in the cost from the beginning and, in later years of effort, providing as much as one half or three fourths of the budget. The usual program of activities includes a survey to determine the prevalence of the disease; a campaign of treatment; a program of popular education; and the development of sanitary regulations for the preven-

tion of soil pollution and the transmission of the infection.⁷⁶ The International Health Board considers that its work for the control of hookworm disease in the South is virtually finished, although, in 1922, it was still giving some attention to the problem.

As a result of the activities described, hookworm disease has been reduced in prevalence and severity. It was still widespread, however, in 1922. During 1921, 597 patients at the United States Veterans' Hospital, Biltmore, North Carolina, were examined. Few, if any, had been admitted for special treatment of intestinal parasites, but examination showed that over 25 per cent of them were infected by hookworm disease.⁷⁷ On the other hand, while in 1911 to 1914, when the work was started, nearly 60 per cent of 9,000 school children examined were discovered to have hookworm disease, it was found in 1920 that less than 22 per cent of children in the same district were infected. (See Figure 36).⁷⁸ The decreased severity of the disease is shown by the reduced number of worms expelled from patients as well as in the improved appearance of those infected. In addition, general county health work has developed in a promising manner, and from 1910 to 1920, legislative appropriations for public health activities in these eleven states increased more than 500 per cent.⁷⁸

Industrial Diseases.—Insufficient investigation has been conducted to make possible an exact evaluation of the harmfulness of various chemicals and other materials used in industry, but enough is known to indicate that a great deal of disease is due to poisonous gases, vapors, dust and other conditions peculiar to industry. Since the war such dangers appear to have increased. Only a few of the industrial diseases can be mentioned here.

*Lead poisoning.*⁷⁹—This is one of the most frequent and most serious of the industrial diseases. If a pound of lead drops on a worker's head, the seriousness of the disaster is evident, but it is not more fatal than the slow absorption

into the system day by day of minute quantities of certain lead compounds. Young persons are more susceptible than old, and women more than men. Virtually all forms of this metal are poisonous. They reach the worker sometimes as dusts and sometimes as fumes. Both acute and chronic lead

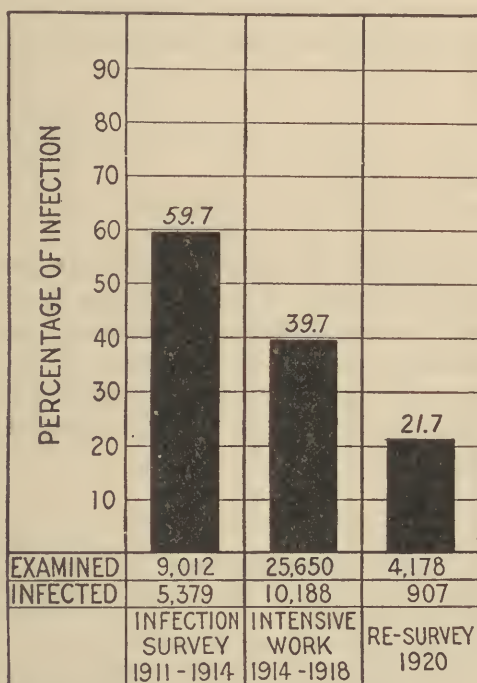


FIG. 36.—DECLINE IN HOOKWORM INCIDENCE AMONG SCHOOL CHILDREN IN SOUTHERN STATES DURING TEN-YEAR PERIOD, 1911 TO 1920. BASED ON EXAMINATION OF 38,840 CASES IN TWELVE COUNTIES.

From the Rockefeller Foundation, Annual Report, 1920.

poisoning are found in industry; it is more frequent in the chronic form. The results of lead poisoning include in-

digestion, arteriosclerosis, lead palsy, anemia, and a lowered resistance to infection, especially to tuberculosis. Among pregnant women, fetal death is a common result. Lead is used in the manufacture of paint, rubber compounds, storage batteries, pottery, earthenware, and other products. The English protect workers in this industry much better than do American manufacturers, as is suggested by the following table of morbidity rates per annum for plumbism: ⁸⁰

	<i>Rate per 100 persons employed</i>	
	<i>Men</i>	<i>Women</i>
English potteries 1910.....	0.8	1.5
68 American potteries and tile works 1911..	8.0	14.0

The United States Public Health Service has issued a comprehensive report on "Lead Poisoning in the Pottery Trades" with recommendations regarding prevention.⁸¹ Protective measures consist of (1) the prevention of dust and the removal of fumes, (2) body cleanliness. The Massachusetts State Department of Health recommends the following measures:

ADVICE TO EMPLOYEES

- (1) General personal cleanliness is of the first importance.
- (2) Thoroughly clean your hands before touching food and before leaving the workroom.
- (3) Thoroughly rinse your mouth before eating.
- (4) Take good, nutritious food and plenty of milk.
- (5) Take a substantial breakfast; an empty stomach is more susceptible to the poisonous effects of lead.
- (6) Never eat at your work. Eat your luncheon outside of the workroom if possible; if not, in a part of the room away from the lead. Never smoke or use tobacco in any form while at work.
- (7) Avoid all excesses; alcoholic beverages are especially injurious.
- (8) Wear overalls or a long coat at your work; also a cap or some head covering. Whenever practicable wear gloves when lead is to be handled.

(9) Persons working in white lead or other powdered compounds of lead should always wear a respirator at work. Cause as little dust as possible.

(10) Consult a physician at the first sign of ill health.

ADVICE TO EMPLOYERS

(1) Provide washing facilities, lockers, and a place for the employees to eat luncheons away from lead.

(2) Provide respirators for all the workers who have to handle white lead or other powdered compounds of lead.

(3) The floors of the workrooms and benches at which men work should be cleaned daily after thoroughly moistening them.

(4) These regulations should be posted in a conspicuous place in the workroom.

*Poisonous Dusts.*⁸²—There is need for much more definite data regarding the effects of dust than are now available. It has been discovered that the sickness rate among linen, cotton, and woolen mill operatives in European countries is above the average, but there is no proof that this is due to dust. It is known, however, that dusts containing silicon, such as granite and flint, are harmful. Considerable controversy has developed over other mineral dusts; there is no proof that cement dust or soapstone dust is harmful to the lungs. Investigations were being conducted in 1922 to determine the harmfulness of fur dust.

Among other poisons which should be considered is benzol.⁸² This has come into use as a result of the development of the coal tar industry. Benzol is used in the manufacture of rubber, shoes, varnishes, shellac, and paint removers, also in dry cleaning. Although sudden and fatal poisoning from benzol is infrequent, it is present in chronic form in a considerable number of cases. It is a disease to which many women and girls are exposed. Phosphorus, arsenic, mercury, carbon monoxid, and hydrogen sulphid are other industrial poisons. Caisson disease is found among workers in caissons, when decompression of the air occurs too sud-

denly. It may cause severe pains in the muscles and joints called "bends" and death or paralysis may result.

Dr. Alice Hamilton, of the Harvard Medical School, emphasizes the need for *additional investigations* of the health of men and women in industry, to determine the effects of various substances about which little is now known; she believes that the only agency which can do this work properly is the United States Public Health Service.⁸²

Fatigue.—For ten or fifteen years there has been much interest in the subject of fatigue, particularly as it relates to efficiency in manufacturing establishments. Numerous studies have been presented by writers who claim that a decrease in the number of hours of labor has reduced fatigue and increased the rate of production. It is generally conceded that fatigue interferes with health and efficiency of a considerable proportion of workers in industry; and, because it is sometimes a menace to public safety (when it affects the efficiency of railroad engineers, chauffeurs, and telegraph operators), fatigue has been recognized in legislation, and laws are now in force in many of the states limiting the day's work to eight hours. There is now an international committee on industrial fatigue, and on December 5, 1921, in England, the fifth annual "Fatigue Elimination Day" was celebrated.⁸³

It is suggested by Spaeth of Johns Hopkins University,⁸⁴ however, that some of the studies made on the subject of fatigue in industry have not proved that fatigue is due wholly to long hours. In his opinion, Sidney Webb, of England, deals with the subject of length of working day more understandingly and frankly when he says:

The demand for shorter hours of labor has arisen among the working classes, not so much from the conviction that their present hours are injurious to health—though that in many cases is the fact—not so much from the theory that shorter hours mean higher wages—though that theory is in the main sound—but from the strongly felt desire for additional opportunities for recreation and the enjoyment of life.

On the other hand, it appears that there is considerable fatigue, and that in itself it may become a pathological condition. Says Frederick S. Lee: "Fatigue is a potent physiological state which enters into all human activities. In its normal manifestation it is a warning. If the warning is not heeded, the condition may become pathological and that is a sign of something serious. . . . There is nothing more pathetic than to see an employer disregard the laws of physiology, use his helper to the breaking point, and then cast him aside."⁸⁵ Furthermore, there is considerable evidence to support the view that continuous muscular activity results in production of poisons which cause fatigue.

Fisk thinks, however, that fatigue is due more to the condition of the central nervous system than to the result of muscular work.⁸⁶ He also mentions as causes, unfavorable mental conditions, such as worry and suppressed or thwarted impulses. He believes, too, that fatigue may be due to the original fundamental physical condition. The question should be asked, he suggests, Is a man ill because he is fatigued, or fatigued because he is ill? Fisk invites attention to the large proportion of men in industry who are suffering from various disorders and defects, and believes, therefore, that in many instances fatigue and ill health are produced by abnormal conditions of the body.

It is frequently stated that fatigue makes one more susceptible to various infectious diseases. Oppenheimer and Spaeth found in experimenting with rats no evidence that fatigue causes among them increased susceptibility to toxins and infections.⁸⁷ Abbott and Gildersleeve, however, obtained contrary results in an experiment with rabbits.⁸⁸ The majority of writers at the present time would probably agree that among human beings fatigue does lessen the resistance to infectious diseases. From this point of view, fatigue is an important cause of minor ailments, just as minor ailments are the causes of the more serious diseases; for instance, fatigue may lead to a common cold, a cold to tuber-

culosis, and tuberculosis to death. There is need in this field, too, for further research and exchange of scientific data.

In addition to the diseases peculiar to certain industries and to fatigue, it is important to note that many occupations appear to encourage the development of tuberculosis. In some industries, excessive degrees of humidity and temperature are likely to be extremely harmful. There are many health hazards in industrial occupations to which persons in other walks of life are not exposed.

CHAPTER VIII

ENEMIES NOT YET ATTACKED

AGAINST tuberculosis, syphilis and gonorrhea, the diseases of infancy and childhood, mental diseases, cancer, malaria, hookworm disease and the industrial disorders, programs of educational and medical measures are in various stages of development, and these diseases are receiving increasing attention from public health agencies and the public at large. Against pneumonia and influenza, nephritis, heart disease, drug addiction, pellagra and diabetes, no nation-wide warfare is now being waged in the United States, although these diseases rank high as causes of death and sickness. This group of maladies will now be discussed, and brief comments made on other somewhat less prevalent diseases, also on certain minor causes of general ill health not being systematically attacked.

Pneumonia and Influenza.—In 1920, pneumonia and influenza together were responsible for almost twice as many deaths as was tuberculosis—pneumonia causing 10.5 per cent of the total deaths, and influenza, according to the report of the Census, 5.4 per cent.* It would perhaps be more accurate to state that approximately 15 per cent of all deaths were caused by pneumonia, because, if we are to accept the statement of Rosenau, influenza itself probably never kills.¹ The 1920 figures, however, include many deaths due to the influenza epidemic of that year, and are, therefore, abnormally high.†

* See graph, page 16.

† See Appendix 2 (page 441) for mortality rates by states.

Pneumonia takes its toll at all ages.² It occurs during all seasons, but particularly in the winter and spring. It is somewhat more prevalent in the city than in the country. The incidence of pneumonia is probably higher than formerly (Figure 37 gives the death rates for pneumonia and influenza in Massachusetts),³ this being due largely, perhaps, to an increasing degree of congestion in cities.

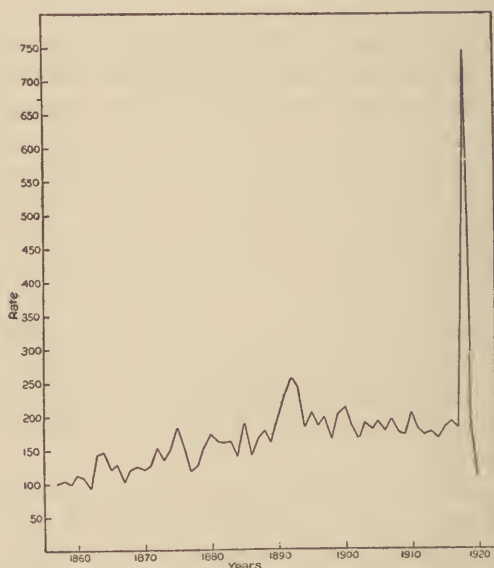


FIG. 37.—PNEUMONIA (ALL FORMS) AND INFLUENZA. MORTALITY PER 100,000 PERSONS IN MASSACHUSETTS, 1857-1920.

Because this disease flourishes where overcrowding is prevalent, preventive measures should include better housing laws and such general improvement in economic and social conditions as will permit industrial workers to live under more hygienic conditions. The promotion of such measures as will bring about a reduction in colds, grip, and influenza will tend to prevent pneumonia; and it is believed by some

students that a reduction of fatigue in industry will make people less susceptible to infection from the pneumococcus. Discharges from the nose and throat of infected persons should be burned, isolation more rigidly enforced, and the well separated from the sick. Vaccines for the prevention of certain types of pneumonia are now being tried,

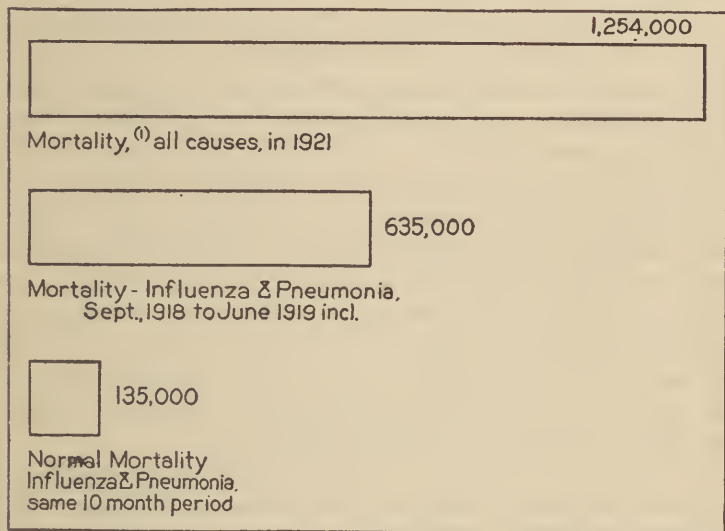


FIG. 38.—ESTIMATED MORTALITY DUE TO INFLUENZA AND PNEUMONIA IN THE UNITED STATES DURING EPIDEMIC OF 1918-1919 COMPARED WITH OTHER MORTALITY DATA.

¹ Figures in all cases are estimated from deaths in registration area.

The year 1915 was used for the estimate of the normal (or, better, the usual) mortality from influenza and pneumonia.

but, while several encouraging experiments have been made, no conclusive results have been achieved. A measure of first importance for state and city boards of health is the addition of pneumonia to the list of reportable diseases. The American Public Health Association appointed in 1922 a committee of ten Fellows and members to study the problem of pneumonia prevention.

Influenza has occurred during the past thousand years in various parts of the world. There have been fourteen well-defined pandemics since 1510. The disease has been epidemic in North America at least 18 times. It attacks a country with explosive violence, says Rosenau,⁴ and affects persons of all ages. In the recent epidemic, young adults especially were susceptible.

At the time of the pandemic of 1918-19, there were in the registration area of 1915 from September 1st to June 30th, 339,830 more recorded deaths from all forms of pneumonia (and influenza) than usually would have occurred. This mortality, extended to the whole population of the United States, gives an estimate of approximately 500,000 *excess* deaths during the pandemic. Normally there would have been about 135,000 deaths from both diseases during these ten months of the year; but during the pandemic there were 635,000. The seriousness of an epidemic of influenza is suggested by Figure 38⁵ on the preceding page. It will be seen that the mortality from pneumonia and influenza during these ten months was more than half the normal mortality from all causes for an entire year.

A study by the Public Health Service of the incidence rates of influenza during the last pandemic in eleven well-distributed localities throughout the United States shows that on an average about 280 persons per thousand were attacked. If this rate is applied to the entire population, as seems to be reasonable, it appears that nearly 30,000,000 persons were affected. (See Figure 39).⁶

As a preventive measure, various vaccines have been used, but with contradictory results. During the recent pandemic, face masks, the closing of schools and theaters and similar measures were tried, but, so far as can now be judged, none of them reduced the disease to any appreciable degree.

Olitsky and Gates have isolated from secretions of influenza patients an organism named by them *bacterium pneumosintes*, "filterable, anerobic, resistant and pathogenic for

rabbits, in which it induces a typical infection comparable with epidemic influenza in man." These investigators, however, were not ready as late as February, 1923, to claim that this bacterium is the cause of epidemic influenza. Even when the germ is definitely identified, further experimentation, over a period of years perhaps, will be necessary for the development of preventive and curative agents; and study

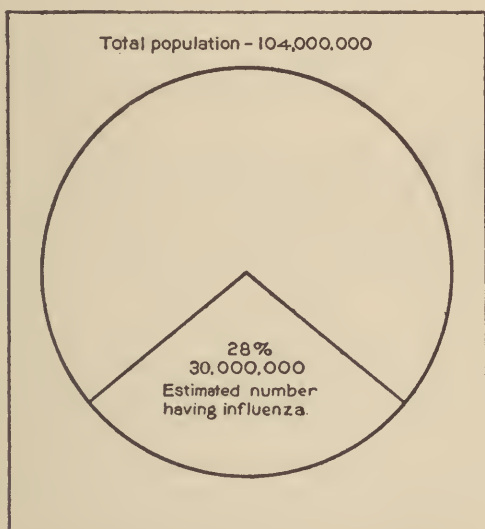


FIG. 39.—ESTIMATED NUMBER OF PERSONS WHO HAD INFLUENZA DURING THE 1918-1919 EPIDEMIC IN THE UNITED STATES, BASED ON A STUDY OF 11 WELL DISTRIBUTED LOCALITIES.

must proceed without the assurance of final success.⁷ Warren T. Vaughan believes there should be a research organization, consisting of epidemiologists and other scientists as well as bacteriologists, devoting all their time to the study of influenza throughout the world. He agrees with Crookshank that our present epidemiologic intelligence service is hardly superior to that of a meteorologic office which gives

warning of rain only when unfurled umbrellas pass along the street. Only through better organization of our scientific forces shall we be prepared for the epidemics and pandemics which are sure to come.⁸

Diseases of the Heart and Kidneys.—Although the organic diseases of the heart, Bright's disease, and acute nephritis, were responsible in 1920 for 17.7 per cent of all deaths,* and although they appear among the most serious causes of disabling sickness (as shown particularly by the study of over 500,000 persons by the Metropolitan Life Insurance Company) very little is being done by health agencies to prevent them.

There is a close relationship between diseases of the heart, and kidneys. Heart disease may result in serious changes in the kidneys, and disorders of the kidneys may cause heart disease. Together they constitute a health problem of the first magnitude. Louis I. Harris, of the New York City Department of Health, recently estimated⁹ that there were then in the United States more persons with diseases of the heart, arteries, and kidneys than make up the population of New York City, estimated at that time to be 5,753,000. The death rate in the registration area of the United States during 1920 for organic diseases of the heart and diseases of the kidneys is shown by the following table:¹⁰

<i>Age groups</i>	<i>Organic diseases of heart Death rate per 100,000</i>	<i>Acute nephritis and Bright's disease Death rate per 100,000</i>
Under 1	34.3	31.8
1-14	11.3	7.1
15-44	36.1	25.0
45-74	386.9	256.1
75 and over.....	2957.8	1602.6

* See page 16.

The table shows that diseases of the heart and kidneys are primarily disorders of old age, the death rate being much higher between the ages of forty-five and seventy-four than at earlier ages and conspicuously high after the age of 75.* Both diseases are found among children, however. A study was made by Louis I. Harris of 850 children, whose parents believed they had made a complete recovery from recent scarlet fever; but 5 per cent showed signs of serious heart injuries, and an even larger per cent, indications of kidney damage.¹¹

Acute Nephritis and Bright's Disease, even more than diseases of the heart, are peculiar to old age. Occasionally nephritis follows scarlet fever and other diseases of childhood, resulting on rare occasions in death. Nephritis among adults sometimes follows syphilis, tuberculosis, malaria, and other infections; probably it is most often associated with chronic focal infections and with overeating accompanied by overindulgence in alcoholic drinks.

Little is known regarding the prevention of nephritis. Periodic health examinations will enable persons in middle age to discover the first symptoms of the disease and, through the application of personal hygiene, to prevent or retard the development of the disease. The establishment of clinics in which special attention is given to general diagnosis should aid in the early uncovering of conditions leading to nephritis.

Organic heart diseases cause a larger proportion of all deaths than those of the kidneys—10.9 per cent in the one case during 1920 and 6.8 per cent in the other.† The trend of the mortality curve for organic heart disease is upward, as is suggested by the records of Massachusetts.¹² (See Figure 40 on the following page.)

Of 2,500,000 drafted men examined, 120,000 showed organic cardiac defects.¹³ In certain occupations, especially

* See Appendix 2 (page 441) for mortality rates by states.

† See page 16.

those which require labor under high temperature, it is believed that the incidence of heart defects is abnormally high.¹⁴ From 1 to 2 per cent of the children in the elementary schools suffer from heart defects, and a slightly higher proportion of those in high school.¹⁵

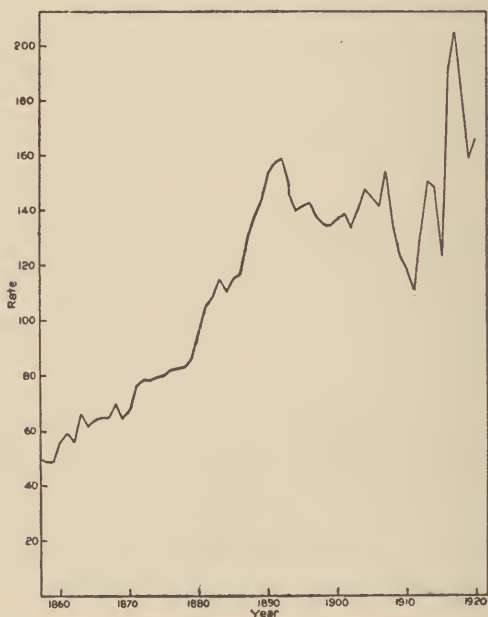


FIG. 40.—MORTALITY FROM ORGANIC DISEASES OF THE HEART PER 100,000 PERSONS IN MASSACHUSETTS, 1857-1920.

Heart diseases result chiefly from infectious diseases, especially those of childhood, and from focal infections. Syphilis is a frequent cause of cardiac disease, when the heart becomes affected after the age of approximately thirty.

Preventive measures should be started in early childhood. They include dental hygiene and the removal of diseased tonsils for the purpose of preventing rheumatism, cardiac

disease among children being caused largely by acute infectious arthritis. When an infectious disease occurs, the patient should be kept in bed for thorough convalescence. The education, through social workers, of parents regarding the care of children with cardiac disease is advocated, also special homes for children whose parents cannot give them proper care.

Prevention in some cases may be brought about through vocational guidance for the purpose of keeping those with weak hearts out of hazardous occupations. Of the 51,000 children who appeared before the New York City Department of Health for working papers in 1920, it was found that 813 had a cardiac defect;¹⁶ to have put these children at work in certain occupations would have brought about in many instances serious developments of the disease.* Factory medical inspection is also advocated, and frequent rest periods in industries where marked fatigue may be observed.

There were, in 1922, 38 cardiac clinics in New York City, 8 in Chicago, 6 in Boston and others in approximately 15 additional cities of the United States.¹⁷ The periodic examination of persons at all ages would assist greatly in bringing to light, not only nephritis, but many cases of cardiac disease the progress of which might be considerably retarded.

In very recent years, good work has been done in bringing to the attention of the public the importance of preventing early the development of cardiac disease. An association for the prevention and relief of heart disease was organized in New York City, and that has been followed by the establishment of similar organizations in Chicago, Boston, and Philadelphia.¹⁷ In June, 1922, a committee was appointed to form a national Association for the Prevention and Relief of Heart Disease.

* See also pages 346-47.

Narcotic Drug Addiction.*—This is a condition brought about by the habitual use of opium and its derivatives (morphine, codeine, heroin, and dionin) and of cocaine (manufactured from coca leaves). Anyone repeatedly taking the drug from ten to thirty days, depending upon his susceptibility, is in grave danger of becoming an addict.¹⁸ There is some difference of opinion as to the nature of the pathological condition resulting from drug addiction;¹⁹ but no disagreement regarding the intensity of the physical suffering it causes. Descriptions of the distress experienced by addicts when deprived of drugs are harrowing.²⁰

The Present Status of Drug Addiction.—In 1922 a considerable body of opinion indicated that drug addiction was increasing. "The unlawful use in the United States of America, of opium . . . with the attendant irreparable injury to health and morality and resultant death from continued use," states a Joint Resolution of the United States Congress, signed by the President March 2, 1923, "is increasing and spreading."²¹ Among those who believe that addiction is not increasing are Alexander Lambert, Professor of Clinical Medicine at Cornell University and one of the past presidents of the American Medical Association, and L. G. Nutt, Chief of the Narcotic Division of the Federal Government.²²

The number of drug addicts in the United States cannot be stated. S. Dana Hubbard, of the New York City Department of Health, believes that many statements regarding the number of addicts are greatly exaggerated and that not

* This problem is discussed in this chapter on "Enemies Not Yet Attacked" because, while it is being handled by law enforcement officers, no adequate *well-balanced* program of measures for its control has yet been even formulated. Just as it was not enough to combat venereal diseases by sending prostitutes to jail (which is almost all that was done before the development of the American program of venereal disease control); so the people of the United States will not have seriously attacked the problem of narcotic drug addiction until they deal with it through a well-organized program of law enforcement, educational and medical measures.

more than $\frac{1}{4}$ of 1 per cent of the population are affected.²³ Pearce Bailey, former Chief of the Section of Neurology and Psychiatry, of the Surgeon General's Office in the Army, reported that up to May 1st, 1919, only 3,284 men had been rejected for drug addiction by neuropsychiatric officers out of about $2\frac{1}{2}$ million men; and he thinks, therefore, that drug addiction in the United States is not so terribly widespread as is sometimes represented.²⁴ On the other hand, according to the estimate of a special committee appointed by the Secretary of the Treasury making a report in 1919, the number of addicts in the United States at that time was more than 1,000,000.²⁵ Reports were received by

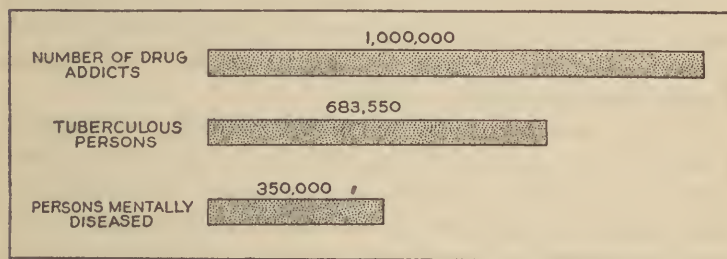


FIG. 41.—ESTIMATED NUMBER OF DRUG ADDICTS, TUBERCULOUS INDIVIDUALS, AND PERSONS MENTALLY DISEASED, IN THE UNITED STATES.

the committee from 31 per cent of the physicians of the country who had under treatment 73,150 addicts. If the same average had been maintained for 100 per cent of physicians (which perhaps should not have been expected), there would have been at that time 237,655 addicts, *including only those under treatment*.²⁶ Even though the estimate of the Treasury Department's committee (see Figure 41) be rejected as too high, and some lower estimate used, it may still be observed that drug addiction constitutes a problem of first magnitude.

There were 628,979 pounds of opium (containing 9 per cent and over of morphine) imported into the United States

during the year ending June, 1920.²⁷ According to the report, made in 1919, of the special committee of the Treasury Department, as much was being smuggled into the country annually as was being imported.²⁸ The amount of opium imported during the fiscal year ending June, 1922, compared with that imported two years previously, decreased to 135,093 pounds;²⁹ but the amount smuggled into the country during the year greatly increased, it is said.³⁰ The marked reduction in the importation of opium from 628,979 pounds to 135,093 pounds in two years has been due to the enforcement by the Narcotic Division of the Federal Government of the Harrison Narcotic Act as amended (which requires the reporting of all narcotic drugs imported, sold in the United States, and exported), and to some extent, perhaps, to the fact that under legislation in force in 1922 exportation was greatly reduced.

Only 45,000 pounds of opium,³¹ according to Alexander Lambert, are needed for medicinal and scientific purposes. The total amount needed annually for such purposes throughout the entire world, according to the author of the joint congressional resolution, is only 150,000 pounds.³² The Federal Narcotics Control Board, composed of the Secretaries of Treasury, State, and Commerce Departments, authorized the importation, during the year 1922-3, of 136,000 pounds, believing that this amount was needed for medicinal and scientific purposes.³³

The great bulk of opium used by addicts is smuggled into the country. The Assistant Chief of the Narcotic Division of the Federal Government, estimates that 65 to 85 per cent of drugs used by addicts is smuggled.³⁴

The use of habit-forming drugs is not restricted to any race, nationality, or class. Addicts are found from twelve to seventy-five years of age. Writers call attention to the youth of many addicts. The New York City Department of Health found that 66 per cent of 7,464 persons applying at its clinic for drug addicts were under thirty years of

age; 743, or 9 per cent, were between fifteen and nineteen years old.³⁵ On the other hand, the average age of 1,646 cases treated at 27 clinics, according to a report of the Secretary of the Federal Narcotics Control Board, was approximately forty years.³⁶

It is difficult to estimate the economic cost of drug addiction. According to the report of the special federal committee, made in 1919, over 61 million dollars was being spent annually by drug addicts. The committee estimated that at least 25 per cent of addicts were not occupied in gainful occupations, which, according to the report, would represent an additional loss of at least 150 million dollars annually. These figures do not include the cost to federal, state and municipal governments of the suppression and punishment of crime due to drug addiction. The Federal Government alone appropriated for the fiscal year 1922-3 \$750,000 for the enforcement of anti-narcotic laws, which amount has been wholly inadequate.³⁷

How Drug Addiction is Acquired and Its Effects.—There are two types of addicts, those who acquire the drug habit more or less accidentally through the use of medicines prescribed by a physician or purchased at a drug store, and those variously designated as criminals, degenerates, or feeble-minded, and associates of such persons. No sharp line of demarcation can be drawn between these groups; many might be classified in either. Opinion differs greatly, apparently, as to which group is the larger.

Thomas S. Blair, former Chief of the Bureau of Drug Control of the Pennsylvania State Department of Health, said, early in 1923, "Don't get the idea that all drug addicts are abandoned wretches or criminals; they are not, for fully one half of the addicts registered in my office are reputable people, and quite a proportion of them have a more or less serious disease that was the original cause of the addiction."³⁸ Stephen G. Porter, of the House of Representatives, after considering a vast amount of evidence presented

before the Committee on Foreign Affairs of the House, states that "addicts are the victims of misfortune over which but few of them have had any control. An addiction rarely occurs through viciousness except in the cases of habitués of the so-called 'underworld,' and perhaps many of these have been reduced to this social condition as the result of addiction. They are the most grateful of patients, and frequently commit minor offenses so that they may be committed to an institution, in the hope of being cured of their affliction." W. H. Crim, Assistant Attorney General, states:

We have cases where these men call up and say: "I am a drug addict. I am going to sell some opium down on the corner of such and such a street at such and such an hour, and if you will go there you can apprehend me. I want to go to jail. I am afraid of myself."³⁹

There is great difference of opinion, also, regarding the responsibility of physicians for the growth of drug addiction. Hubbard found that 69 per cent of the New York clinic patients acquired their addiction through harmful associations. He says, "Instead of many persons being made narcotic drug users incident to improper prescribing by careless doctors, it is found that drug addiction operates like a pestilence through association."⁴⁰ B. R. Rhees, the federal narcotic agent in charge of the Baltimore Division in 1922, considers it not surprising that the passion for something new has turned young persons in the direction of using narcotic drugs. "The process of becoming a user of cocaine is simple," he says. "Usually it is through association with some unscrupulous young man or woman who like an octopus, with tentacles stretched in every direction, waiting for the luckless victim to come within reach, infests dance halls, cabarets and amusement parks."⁴¹

Several writers, on the other hand, hold physicians responsible for considerable drug addiction.⁴² Thomas S. Blair finds that on the whole the Pennsylvania Department

of Health has less trouble with druggists than with physicians.⁴³ He reports that, prior to 1920, the most capable two thirds of the medical profession of Pennsylvania were using only 10 per cent of the morphine consumed in that state, and that the less capable one third were using 90 per cent of it, most of which went to addicts. In 1921, as a result of various corrective measures, the less competent one third were using only 60 per cent. Some of this was being used for addicts, but the greater part was being unwisely prescribed in medical practice. The Kentucky State Board of Health has revoked the licenses of some sixty doctors who have dispensed habit-forming drugs illegitimately, and has "systematically stopped the issuing of federal licenses to doctors who are themselves drug habitués."⁴⁴ John Dill Robertson, health commissioner of Chicago for seven years, stated at Washington before the Congressional Committee investigating the problem⁴⁵ that, in 1918, during the influenza epidemic a committee of prominent physicians in Chicago had warned doctors not to use opium or any of its derivatives in the treatment of influenza, stating that to do so would make more likely the development of pneumonia. Doctor Robertson checked 741,825 prescriptions filled in the month of October by 975 drug stores. Of these, over 440,000, he stated, were for influenza and pneumonia, and of this number of prescriptions, more than 103,000 contained narcotics—notwithstanding the warning that had been given.

It appears to be the consensus of opinion that prohibition has not increased narcotic drug addiction. L. G. Nutt, Chief of the Narcotic Division, after a trip through the country, during which he made many inquiries regarding this subject, stated that he had failed to find a single instance of addiction acquired as a result of prohibition.⁴⁶

Crime is one of the most serious evils accompanying drug addiction. The city health officer of Portland, Oregon, recently became alarmed by the increasing number of addicts

who were crowding the city and county jails. "In the beginning," said the Oregon state health officer in commenting on the situation,⁴⁷ "the dope fiend was considered an outcast even among the criminals; to-day almost the opposite is true, for most of the crimes are now committed by persons addicted to the use of drugs." Apparently most of the crime committed by addicts is for the purpose of obtaining money or other means with which drugs may be purchased. Says Doctor Lockwood, Superintendent of Criminal Institutions of Minneapolis, "Where one crime can be traced to liquor, a hundred are the result of drugs."⁴⁸ Dr. Lambert says that most of the criminals on the Atlantic seaboard are heroin addicts⁴⁹ and that the manufacture of this drug might be entirely stopped without hardship to anyone. "Heroin is a drug," he says, "for which there is no medical excuse."⁵⁰

Attempts at Control.—Clinics for drug addicts were established a few years ago in New York City, New Orleans,⁵¹ Los Angeles, San Diego,⁵² and some thirty or more other cities. They dispensed drugs to addicts in diminishing doses. Some of these clinics provided considerable useful information regarding the addict and the drug traffic. Furthermore, within two months after the opening of the Los Angeles clinic, twenty-four individuals had made earnest application to be placed in some institution for final treatment and cure. On the other hand, it is believed by some persons that the maintenance of a clinic tends to increase the use of drugs. All clinics established have been closed either by those in charge or by the Commissioner of Internal Revenue. The weight of opinion in 1923 was decidedly against the clinic.

Ambulatory treatment appears still to be advocated by some physicians, although, according to Alexander Lambert, three generations of doctors have found it to be a failure.⁵³ It is generally agreed that clinic patients cannot be trusted to confine their use of the drug to the amount

prescribed, and likewise that private practitioners should not expect to control the use of the drug among patients who are free to patronize other physicians and buy drugs from peddlers.

It is said that there are a considerable number of sanatoriums for drug addicts which charge high fees, pamper their patients, and seldom, if ever, bring about actual cures. "The average sanatorium," one writer says, "is merely a small colony of drug users."⁵⁴ Patients sometimes go from one institution of this kind to another, it is reported, paying sums as large as \$10,000, but showing little or no improvement.

Actual and permanent cures, many physicians apparently believe, are seldom achieved. "Despite the fact of an array of hopeful statistics as to the percentages of cures which have been brought about," says Matthias Nicoll, of the New York State Department of Health, "every one of you knows that it is a rare exception, even with the best facilities, including hospital care, for a confirmed addict to give up permanently the use of narcotic drugs."⁵⁵ L. G. Nutt, Chief of the Narcotic Division of the Federal Government, states that in his twenty-two years of experience with drug addicts, during which he has talked with thousands, including many who have taken various "cures," he has never seen a confirmed addict who has been permanently cured.⁴⁶ Furthermore, Charles B. Towns, who has previously written quite optimistically regarding the possibilities of cure, said in April, 1923, that very little can be expected in attempts to restore addicts of the underworld type. "No matter how long they are safeguarded, they have eventually to go back to their old associates who are using such drugs and it is only a matter of time until they are again addicts."⁵⁶

On the other hand, there appears to be considerable evidence that, when the proper procedure with follow-up work is used, cure is effected. Alexander Lambert has been observing for about fifteen years the results of a treatment

originally proposed by Charles B. Towns and modified later. He considers that it is eminently successful. Lambert reported in 1922 on 1,700 cases, only 28 per cent of which relapsed; he does not state how long they had been under observation at the time of his report.⁵⁷ Richard C. Cabot endorses one well-known treatment, which he has recommended for several of his own patients. He says that they become easily and quickly rid of their morphine addiction, and were still well at the time of his report.⁵⁸ He writes that he does not know how the treatment "accomplishes results which I have seen it accomplish, but I have yet to learn of anyone who has given it a thorough trial" who has obtained results less satisfactory than those described by the head of the institution. Edward H. Williams reviews several somewhat similar treatments which appear to be effective.⁵⁹

Probably many unsuccessful attempts at cure have been due to lack of follow-up work. It must be remembered that taking some persons "off the drug" may leave them with physical and mental disorders which may have been present before they became addicts and which still need treatment. In other instances, it is essential that, after discharge, the patients should live in an environment free from the associations which brought about the addiction. Many will need a carefully planned regimen in respect to diet, hours of sleep, and physical exercise. When a patient has been unpoisoned, says Doctor Lambert, "there remains the problems of psychology."⁶⁰ He continues:

"... we are dealing in the vast majority of cases with psychopathology; we are dealing with sick-souled, misunderstood personalities, distorted from many causes. We must learn to recognize the abnormal psychology of each individual and deal with that individual in whatever way the situation leads. It is often an economic situation that has to be readjusted; it is almost always a psychological distortion that has to be straightened out, and it is usually a social readjustment that has to take place. But with infinite patience and infinite persistence we can deal

with and solve the problems presented by the distorted psychology of this unhappy group of patients."

Various laws have been passed in attempts to control drug addiction. The Harrison Narcotic Act was enacted December 17, 1914, and amended by the act of 1918. It requires physicians and retail druggists to keep records of all narcotic drugs handled; importers, manufacturers, and wholesalers are required to render to the Bureau of Internal Revenue full reports of purchases and sales of drugs; and it forbids other persons from selling narcotic drugs or giving them away. On June 20, 1922, 516 persons were registered under this law as importers and manufacturers, 2,467 as wholesale dealers, 42,942 as retail dealers, and 147,677 as practitioners.⁶¹ The act of February 9, 1909, amended in 1914 and 1919, prohibits the importation and use of opium except for medicinal purposes. This act was replaced by the passage of the Jones-Miller bill (approved May 26, 1922), which prohibits the importation into the United States of any narcotic except crude opium and coca leaves, and only such amounts of these as a board advises "to be necessary to provide for medical and legitimate uses only." It also limits exportation to those countries which have ratified an agreement made some years ago at the Hague.⁶²

The narcotic field force of the Bureau of Internal Revenue, whose duty is the enforcement of the Harrison law, consisted, at the end of the fiscal year 1922, of 176 agents and inspectors. Due to increased activity, beginning July 1, 1921, the Bureau handled 4,014 cases of a criminal character (an increase of 2,637 cases over the previous year), and brought about 2,645 convictions of unregistered persons.⁶³ A considerable amount of effort and money has been expended by state and local agencies in an effort to control the use of these drugs. Although the narcotic agents of the Bureau of Internal Revenue have not always had all the support that might have been desired, they have done

excellent work with the small force available. So long as a large excess of opium is grown and manufactured, however, it will be smuggled into the United States, and so long as it is smuggled in, drug addiction promises to remain a problem.

Is Drug Addiction a Public Health Problem?—In the opinion of various persons, it is. Alexander Lambert would have those with incurable diseases requiring the use of morphine supplied by the health authorities of the various states, so that they would not be preyed upon by unscrupulous dealers.⁶⁴ Edward H. Williams would place the whole narcotic problem “unreservedly in the hands of the United States Public Health Service.” “This would bring it under the control of intelligent physicians,” he says, “who also have legal authority to enforce any clinical or custodial measures that seem necessary and facilities to work out its laboratory and clinical problems without hindrance.”⁶⁵ A. T. McCormack, Secretary of the Kentucky State Board of Health, apparently believes that drug addiction is very much of a public health problem.⁶⁶ In Pennsylvania, as has already been indicated, a considerable degree of control is exercised by the state department of health. John S. Fulton (State Health Officer of Maryland), S. J. Crumline (former Secretary of the Kansas State Board of Health), and Matthias Nicoll, Jr. (Commissioner of Health of New York State), are opposed to the principle of health departments assuming any police powers in dealing with the control of these drugs. The Committee on Narcotic Drug Addiction of the American Public Health Association whose report was adopted at the 1921 meeting of the Association did not consider that drug addiction constitutes “a public health problem in the ordinary sense of the word,” but that the “*prevention* of new drug addiction may be considered as a public health problem.” It urged international control, the education of physicians and further scientific investigation.⁶⁶

State health officers generally appear to be considerably concerned with the general aspects of the problem. At the 1922 meeting in Washington of the Conference of State and Provincial Health Authorities of North America, a resolution was unanimously adopted calling upon the federal government to "request the foreign countries having control of production and manufacture of narcotics to make a careful survey and limit the manufacture to real needs for medicinal purposes."⁶⁷

Most sanitarians would probably agree that the functions of health departments should include such measures as the distribution of educational material warning persons against drug addiction and measures for enlisting the aid of physicians. Some men in the field of public health would have the sanitarian assume the leadership in bringing together all interested persons for the development of a comprehensive program of educational, legal, and medical measures for the control of drug addiction.

Remedial Measures.—The President of the United States signed, March 2, 1923, the Joint Resolution of Congress which requested him to urge upon the governments of Great Britain, Persia, and Turkey the immediate necessity of limiting the production of opium and its derivatives exclusively to the amount actually required for strictly medicinal and scientific purposes, and similarly to urge upon the governments of Peru, Bolivia and the Netherlands the immediate necessity of limiting the production of coca leaves and their derivatives. According to the resolution, the President was requested to report to Congress, within six months after he signed the bill, the result of his action.³³ If the President succeeds in persuading the various governments enumerated above to limit the production of narcotic drugs as indicated, such a measure will be more effective than all other measures combined.

In the meantime, and following the successful culmina-

tion of the President's efforts, the following measures appear to be essential:

(1) More sanatoriums with approved types of treatment must be provided for drug addicts and steps taken to bring about the care in such institutions of those whose condition requires such treatment. It may appear necessary to establish state or municipal institutions for the economically dependent addict, although departments of public hospitals may perhaps be organized and so conducted as to make unnecessary the erection of new buildings.

(2) Provision should be made to supply narcotic drugs to persons with incurable diseases whose condition makes necessary the use of such drugs. For the destitute, public institutions, of course, may be necessary; it will prove economical in the long run for the states to institutionalize many such persons.

(3) More private and public hospitals for the mentally diseased must be provided, so that when those who are cured of drug addiction are discovered to be psychopathic and in need of systematic care, institutions will be available for them.

(4) A movement must be inaugurated among physicians to limit the use of narcotic drugs in the treatment of painful diseases. Co-operation of medical schools should also be won, so that medical students may be trained to understand the medical and psychological problems involved in drug addiction, and to avoid treatment which will result in creating more addicts.

(5) The support of state and local law enforcement officers must be obtained. The staff of the Narcotic Division of the Bureau of Internal Revenue should be increased, so that the Federal Government may more effectively suppress illegitimate traffic.

(6) Measures must be cautiously devised for the education of the lay public regarding the danger of continuing

unnecessarily the use of narcotic drugs in medical and surgical cases.

Pellagra.—This is another disease whose prevalence is not adequately revealed by morbidity statistics. It is a malady causing disturbances of the digestive tract, a rash or eruption on the skin, and various nervous disorders. Occasionally it leads to insanity and in about 10 per cent of all cases it results in death.⁶⁸

Pellagra has been studied in Italy and in various countries on the Eastern hemisphere, but it received but little attention in the United States until 1908 when Lavinder, reporting upon four cases in North Carolina found by Wood, recommended that the Public Health Service investigate the problem. Lavinder estimated that in 1910 there were in the United States between 25,000 and 50,000 cases, and Goldberger believed that in 1917 there were fully 125,000 cases in the states south of the Potomac and Ohio Rivers.⁶⁹ There were considerably fewer cases in 1919 and 1920. Then, as a result of the economic depression of the latter part of 1920, it appears probable that in 1921 there were in the United States—mostly in the Southern territory above indicated—about 45,000 persons affected—fewer cases than in 1917 and 1918, but more than 1919 and 1920.⁷⁰ The number of deaths in 1921 was 2,541 for the registration area and 2,000 (Goldberger estimates) for five Southern states not included in the registration area. The mortality for the years 1913 to 1921 is shown in the following table:

	1913	1914	1915	1916	1917	1918	1919	1920	1921
In Registration									
States of 1913	406	567	667	574	717	691	439	296	303
In Registration									
States of 1918	...	...	...	...	...	3117	2016	1444	1533

The increased number of cases from 1913 to 1917 could hardly have been due to the increase of population. The

decrease from 1917 to 1920 was doubtless due, in part at least, to improved economic conditions.⁷¹

The disease occurs during every year of life from infancy to old age. It is probably most frequent in children between two and twelve years and in adults between the ages of twenty and forty.

It was believed by many scientists for some years that pellagra was due to the use of spoiled Indian corn; others believed that it was a communicable infection due to unsanitary methods of sewage disposal. Joseph Goldberger of the United States Public Health Service began working on the problem in 1914, and by 1922 had presented data showing to the satisfaction of most interested scientists that pellagra is due primarily to an improper diet, probably to a faulty quality of the protein supply. Goldberger and his associates have produced the disease in man (convict volunteers) by the administration of a diet of a type that was found associated with pellagra, and prevented it from recurring in certain persons in Southern institutions through the use of a well-balanced diet. Goldberger hopes to discover the particular amino acid, the absence of which causes pellagra. His work up to 1922, however, definitely showed that the prevention of pellagra might be brought about throughout the South through the use of a proper diet, particularly as regards a more liberal inclusion of milk, eggs, and lean flesh foods. Educational measures and the improvement of economic conditions will make such a diet possible. The state departments of health of Mississippi, Virginia, North Carolina and Louisiana have distributed pamphlets on pellagra, but nowhere in the South has any adequate program of preventive measures been undertaken.

Diabetes.⁷²—This is "a disease in which the normal utilization of carbohydrate is impaired, in consequence of which glucose is excreted in the urine." It is due to some fundamental disturbance in the metabolism, probably associated with the pancreas. Two prominent authorities believe

that a diabetic patient may recover, but Joslin is doubtful whether the disease may be cured. He writes: "I am unwilling to state that any of my patients have been cured, though I am watching with interest several cases of the forty now alive who have had the disease for fifteen or more years." Joslin does believe, however, that the average duration of life of diabetic patients is greater than it was twenty years ago.

The disease very seldom develops in childhood. Occasionally, it has its onset in the teens. The majority of cases develop between the ages of thirty and sixty, especially during the latter part of this period. More men than women are treated for diabetes, according to the various authors on the subject; but, according to the mortality statistics, more women than men die from the disease.

It is difficult to say how many diabetics there are in the United States. One method of reckoning indicates that there are over 1,000,000 potential diabetics in the country, and another method shows that there are only 100,000 cases at the present time. "Personally, I believe," says Joslin, "the number of cases of diabetes in the United States is much nearer to 1,000,000 than to 100,000." Provided Joslin is right, diabetes, so far as its prevalence is concerned, ranks with or ahead of tuberculosis.

While the general mortality rate has decreased during the past several decades, the mortality rate from diabetes has increased. In 1900, it was only 9.7 per 100,000; in 1921, it was 16.8.⁷³ Joslin believes that this increase will continue for many years. On the other hand, the increase is perhaps more apparent than real, the increase in the figures being due to greater accuracy of vital statistics, more frequent urinary examinations, and the general increase in the duration of life. As public health measures have brought about the prevention of deaths in early years from other diseases, there have been a larger number of persons alive in later life to become victims of diabetes. The longer a person

lives the more liable he is to the disease. From correspondence and conversations with persons connected with insurance companies, Joslin has found that the percentage of rejections due to diabetes has remained constant for many years.

The interest of sanitarians throughout North America was aroused late in 1922 by the announcement of the discovery by F. G. Banting, a young physician at Toronto, of a substance which holds high promise of relief, at least, to diabetics. Doctor Banting's work has led to the manufacture of insulin from the pancreas of animals, the use of which, it is hoped, will enable patients to assimilate the carbohydrates in food. Whether treatment must be indefinitely continued and what its general effects may be, have not been determined.

The Common Cold.—Far more lightly is the cold regarded than its nature justifies. Common colds are serious, among other reasons because of their frequency. The harm they do in the aggregate in robbing men of efficiency and the joy of living is tremendous. The examination of over 16,000 policy holders of the Metropolitan Life Insurance Company showed that nearly 18 per cent suffered from frequent colds.⁷⁴ Among the 1,282 office workers, whose records were discussed in an earlier chapter, it will be remembered that there were 640 eight-hour days lost during a year and 1,393 calls at a dispensary on account of colds alone; and that among 6,130 school children, one third of the time lost on account of sickness was due to common colds.

It would be futile to endeavor to determine the loss of efficiency and the depression in health due to this infection. The results would quickly mount to figures almost beyond the comprehension. Common colds are important also because they lead to other more serious infections, some of which are fatal. Were it possible to prevent common colds,

the morbidity and mortality rates due to tuberculosis and pneumonia would rapidly drop.

Present limited knowledge regarding the effects on health of the various components of air and of sunshine, and regarding the psychological effects of the numerous measures commonly used for the prevention of colds and infections generally makes it difficult to say specifically what measures do actually prevent the common cold. In the case of outdoor living, it is more likely the absence of close contact with infected persons, brought about by outdoor life, rather than the quality of the outside air that makes possible the avoidance of infection. In general, however, it would be agreed that personal hygiene, including particularly outdoor living, tends to bring about a reduction in the prevalence of colds. In this field also, further research is needed.

Hay Fever and Asthma.⁷⁵—A considerable proportion of the population of the United States suffers from hay fever, asthma, or allied conditions. No one now knows how many. Investigations have recently shown that these affections are due, in most instances at least, to a hyper-sensitive condition of the mucous membranes; and that prevention may be brought about by the discovery of the particular pollen or other protein causing the irritation and by the repeated injection of extracts of the substance into the individual's subcutaneous tissue. It is stated that in about 85 per cent of all cases the offensive protein may readily be discovered.⁷⁶ Vaughan says that "the hay fever sufferer can in a great many instances, not in all, obtain partial relief" by the method suggested. He adds, however, that "practically in no instance is this method of treatment a permanent relief . . . by the next season he [the patient] is just as susceptible as he was before he received any treatment." Relief may be brought to many hay fever and asthma sufferers if, through popular health education, they may be led to seek treatment, and if proper

facilities for treatment are provided by practicing physicians or by health agencies.

In New Orleans, New York and other cities, the destruction of obnoxious weeds is required by law.

Constipation.—This has been spoken of as the great American disease. Among 2,500 employed men, officers of the Public Health Service found constipation surprisingly prevalent, varying from 10 to 61 per cent among different groups examined.⁷⁷ The examination of the 16,000 policy holders of the Metropolitan Life Insurance Company just referred to indicated that nearly 40 per cent of them were suffering from constipation,⁷⁴ and the inspection by the Life Extension Institute of approximately 10,000 industrial and commercial employees showed that 33 per cent were affected.⁷⁸ In the opinion of some authors, the accumulation of waste matter in the lower intestine results in putrefaction of protein and the manufacture of toxins which cause fatigue. It is also believed by some that constipation brings about lowered resistance to infectious diseases, but this theory is not now supported by convincing evidence; and other writers seem to think that the prevalence of auto-intoxication has been greatly exaggerated and that in some instances, at least, *fear* of auto-intoxication tends to make the constipation worse.⁷⁹ However correct these opinions may be from a technical standpoint, it is a matter of common observation that the effects of constipation are bad. It causes lassitude, depression, and headaches.

In this and the preceding two chapters the most important causes of mortality and morbidity have been discussed. There are other diseases which should be included in a thorough survey.* They can be only enumerated here.

*Infantile paralysis (discussed in Chapter VII among the children's diseases) should be considered also among "enemies not yet attacked" discussed in this chapter.

Endemic or Simple Goiter is most prevalent, apparently, in the extreme Northwest, and in the region of the Great Lakes, but it is found to some extent in all the states. Taliaferro Clark examined 13,836 school children in West Virginia during the fall of 1913 and found that almost 9 per cent were affected. In Virginia he found that over 12 per cent of 6,432 children had the disease.⁸⁰ It was conspicuous in army cantonments during the recent war, the incidence among soldiers from some districts being as high as 13.9 per thousand.⁸¹ The Cleveland Hospital and Health Survey showed that in that city about 80 per cent of girls ten years old and over, unless they had had specific treatment under their family physician, were affected.^{81a} Endemic goiter may be prevented and even cured if not too far advanced—simply by the administration of small doses of sodium iodid. This practically harmless drug is now being administered by the school authorities in certain parts of the country. Exophthalmic goiter or hyperthyroidism is more serious but less common. It requires a different kind of treatment.

*Trachoma*⁸² is an eye infection found especially in communities where sanitation is not well advanced. In a large proportion of cases it causes blindness. Impairment of vision can be prevented and often greatly improved after the infection has gained a foothold, by a simple form of surgery called "grattage." Free hospitals for trachoma cases have been established by the Public Health Service in co-operation with the state departments of health, in Kentucky, Virginia, West Virginia, Tennessee, and North Dakota. In 1923 the disease seemed so serious to the State Board of Health of Minnesota that it requested an appropriation of \$48,500 with which to combat it.⁸³

*Botulism*⁸⁴ is due to a poisonous bacillus sometimes found in canned food. In a large percentage of cases it causes sudden death. There have been over 100 outbreaks of botulism in the United States and Canada. Fortunately the

total number of individuals involved has not been great, and it is now believed that a process of preparing food in commercial canneries, recently invented, will destroy the spore of the bacillus and thus prevent its harmful effects.

Dengue,⁸⁵ sometimes called "breakbone fever," is a malady somewhat similar to yellow fever, with the exception that it seldom is fatal. In the rapidity of its spread, it is similar to influenza, sometimes attacking most of the people in a community. It is generally agreed that dengue is transmitted by a mosquito; therefore it may be largely eradicated by mosquito control measures. In the fall of 1922, dengue was epidemic in most parts of the South. In Houston, there were 575 cases reported in about four months, with 19 deaths, but the health officer estimated that there were several thousand additional cases of a more or less mild form which were not reported. In Macon, Georgia, the health officer believed that there were between 20,000 and 30,000 cases. Florida, Alabama, and Mississippi were also affected.

Cerebrospinal Meningitis ⁸⁶ is called a disease of children and soldiers, and was a perplexing problem during the World War. In an epidemic in New York City in 1904-5, there were 6,755 cases and 3,455 deaths. The germ, after gaining entrance to the body, quickly attacks the central nervous system, and, until recently, the disease has been fatal in a large proportion of cases. A serum is now available, which, when promptly used, is most effective in the treatment of the disease, but is not useful as a preventive. It is hoped that the wider use of the serum will greatly reduce the fatality.

PART IV

THE EXPLOITATION OF IGNORANCE
REGARDING DISEASE

*The world is generally averse
To all the truths it sees and hears;
But swallows nonsense, and a lie,
With greediness and gluttony.*

—BUTLER.

*. . . For each step forward which science makes,
cautiously defined and limited, there is a curi-
ously distorted shadow of pseudo-science, claim-
ing blindly that now at last the goal is reached,
warping out of all proportion the added bit of
knowledge.*

—HAVEN EMERSON.

*A great scientific theory has never been accepted
without opposition. The theory of gravitation,
the theory of undulation, the theory of evolution,
the dynamical theory of heat—all had to push
their way through conflict to victory. And so it
has been with the germ theory of communicable
diseases.*

—TYNDALL.

CHAPTER IX

NOSTRUMS AND QUACKERY

IN an advertisement in the Nashua (Iowa) Reporter of February 13, 1919, occurs a statement from W. A. Moon, to the effect that he had used Doan's Kidney Pills "off and on for the last seven years." When he took cold it seemed to settle in his kidneys, he says, and make his back ache. "I have hardly been able to get dressed mornings," he continues. "Those sharp pains have caught me in the small of my back . . . I have always used Doan's Kidney Pills procured at the ————— Drug Store at those times and have received excellent results." The advertisement advises readers not simply to ask for a kidney remedy, but distinctly to request Doan's Kidney Pills, "the same as Mr. Moon had, the remedy backed by home testimony." On another page of the same issue of the same paper occurs the notice that "our venerable townsman, Mr. W. A. Moon, who had been in failing health for many months, passed away at his home Tuesday evening about 9:20." ¹

Doan's Kidney Pills are one of the many nostrums and proprietary medicines for which the people of the United States are paying vast sums of money every year. Figure 42³ on the following page suggests what a large proportion of all medicines are used for self-medication. Although there are only about six drugs that are really specific for the cure of the disease and probably not more than fifty which are necessary in the treatment of human maladies,² thousands of remedies are made and sold to the public. There were manufactured in 1921, patent and

proprietary medicines "for sale in unbroken unit packages to the general public" valued at the factory at about \$108,000,000. Assuming that 80 per cent may reasonably

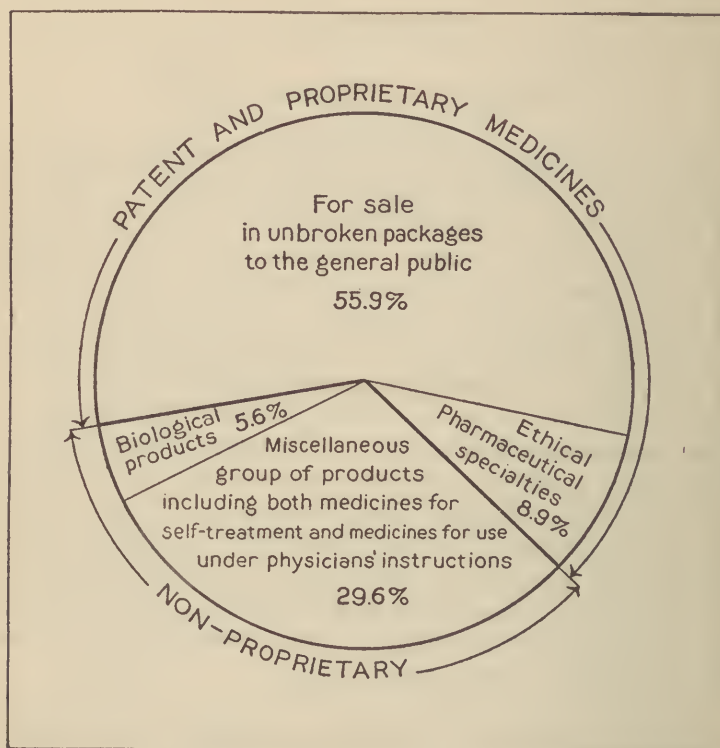


FIG. 42.—PERCENTAGES OF ALL DRUGS MANUFACTURED IN THE UNITED STATES IN 1921 AS CLASSIFIED BY THE CENSUS BUREAU INTO VARIOUS GROUPS, ACCORDING TO VALUE AT FACTORY.

be added to the value at factory for freight and express, jobbers' profits, retailers' profits, advertising and other expenses in marketing, it may be conservatively estimated that the people of the United States are spending

195 millions of dollars per year in the purchase of drugs for self treatment (see Fig. 43). And this amount does not include money spent for "ethical pharmaceutical specialties," biological products and other groups of druggists' preparations (including pills and powders, some of which are apparently used for self-treatment), valued at the factory at approximately \$83,000,000, nor sums paid to "medical

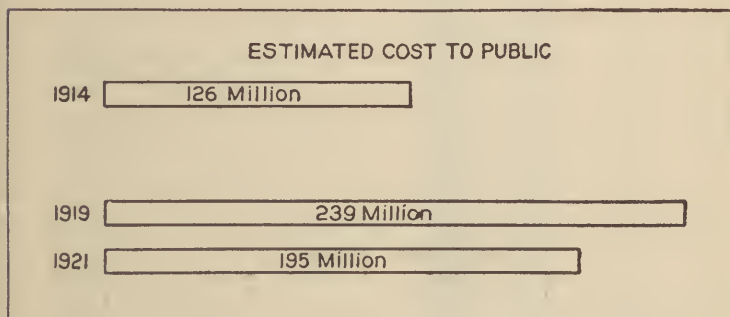


FIG. 43.—ESTIMATED COST IN DOLLARS FOR PATENT AND PROPRIETARY MEDICINES (FOR SALE IN UNBROKEN UNIT PACKAGES TO THE GENERAL PUBLIC) MANUFACTURED DURING CERTAIN YEARS.

It is assumed that freight and express, expenses and profits of jobber and retailer and advertising costs would make the selling price 80 per cent greater than the "value at factory" amounts, reported by the Bureau of the Census as follows:³

1914	\$ 70,000,000
1919	132,978,371
1921	108,359,679

In 1914 the proprietary remedies were given as a single total. Since, in 1919 and 1921 about 16 per cent were classed as "ethical pharmaceutical specialties," 16 per cent of the total in 1914—\$83,455,264—has been deducted.

institutes," itinerant quacks and similar fraudulent concerns. There has probably been little change since 1914 in the amount of patent medicines purchased. The variations in estimated cost only reflect, probably, fluctuations in the value of the dollar. (See also Fig. 44 on the next page.)⁴

The sale of nostrums constitutes a menace to the public health for several reasons. Many nostrums are positively

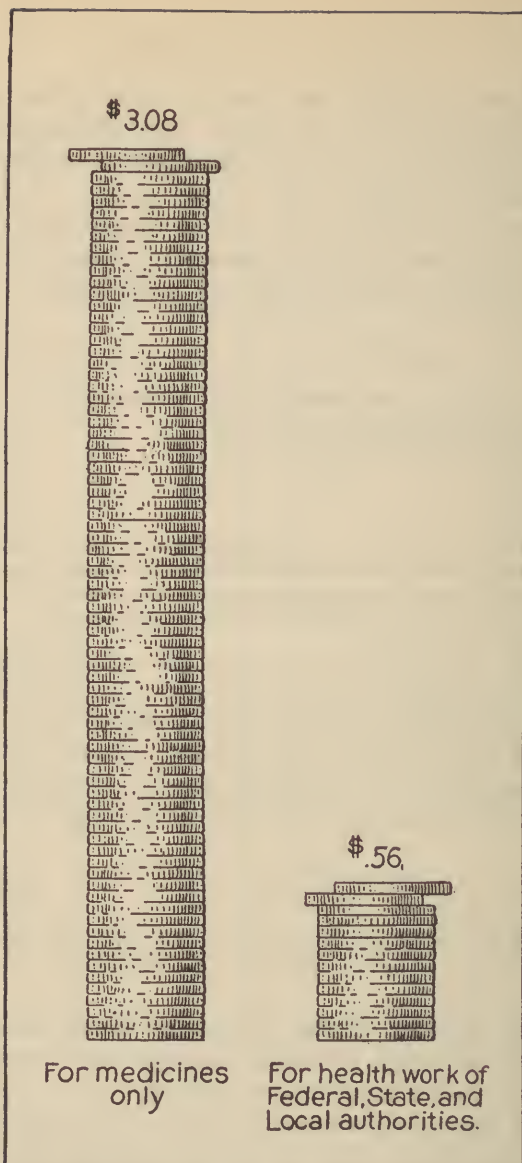


FIG. 44.—COST PER CAPITA TO THE PUBLIC FOR ALL MEDICINES (EXCEPTING BIOLOGICAL PRODUCTS) MANUFACTURED IN 1921 IN THE UNITED STATES AND FOR OFFICIAL HEALTH ACTIVITIES THE SAME YEAR.

harmful; in thousands of cases, they prevent the proper treatment of diseases needing skilled attention; furthermore, the extensive advertising of these medicines results in the miseducation of the people. The widespread prevalence of constipation may be due partially to the impression given by laxative advertisements that constipation is an ailment which can properly be dealt with in this easy manner (and, of course, constipation is due partially to their use). The advertising of nostrums not only encourages the purchase of improper remedies for existing demands, but creates demand. The manufacturer of a nostrum once stated in a communication to a druggist that "fully 75 per cent of all cough and kidney remedies are bought by people who think they have consumption or some serious kidney ailment . . . and not by people who actually have them."⁶ In addition, there is tremendous expense in marketing medical nostrums; it is estimated that most of the money spent by the people for nostrums is used for advertising—in convincing people that there is something wrong with them. Certain soothing syrups, some years ago, contained narcotic drugs. While the situation has improved considerably, no satisfactory statements appear to be available indicating to just what extent narcotic drugs are now used in nostrums.⁵

Manufacturers have exploited the people's eagerness to be vigorous and healthy and free from disease. In a single issue of a prominent American daily (in which nostrum advertising is less conspicuous than in many other papers),⁷ we are informed, in advertising occupying a total of 186 square inches, that Mayr's Wonderful Remedy cured a man with stomach trouble diagnosed by three doctors as cancer, and that now he is as "strong as a bear and can eat more ham and cabbage than any three men"; that S. S. S. has been passed on by a jury of millions of people and is considered one of the most powerful vegetable blood purifiers and flesh builders in existence; that Dr. Caldwell's Syrup Pepsin is the largest selling liquid laxative in the world

and the safest remedy one can give the baby; that Bon-Opto strengthens eyesight 50 per cent in a week's time in many instances; that "Mr. James H. Allen, of Rochester, N. Y., the discoverer of Allenrhu, who for many years suffered the torments of acute rheumatism, desires all sufferers to know that he does not want a cent of any one's money unless Allenrhu decisively conquers this worst of all diseases"; and so on ad nauseam. Finally, Mrs. Gene Case, "the noted health advocate," states that "there are scores of young girls who are thin, frail, and scrawny-looking who would give a lot to know just what tonic to take to round out the hollow places, bring back the bloom to their cheeks, the curves which others envy." She knows a combination Vitamin-Stomachic tablet that works wonders, and she invites the reader to drop in at the _____ Drug Store any day. "I will be mighty glad to talk to them," she says. "There is no obligation."

Is not the newspaper interested in conveying reliable information to its readers regarding so vital a matter as their health, and are not health agencies interested in using newspapers for health education? In the single issue of the newspaper containing 186 square inches of medicine advertising, there are 18 square inches of reliable health information—in this case regarding the care of babies in hot weather. There is no reference to legitimate clinics—nothing else in the entire paper to counteract the pernicious influence of its false advertising.

Some Widely Used Nostrums.—*Doan's Kidney Pills*, recommended by Mr. W. A. Moon before mentioned, have in more than one instance been endorsed by persons dead and buried. After several such coincidences, the manufacturers instructed newspapers carrying their advertisements to return "copy" containing testimonials of local persons who had died!

Potassium nitrate has been found by chemists to be one of the ingredients of Doan's Kidney Pills. It is a powerful

irritant and may do great harm to kidneys that are already diseased. The advertisement of this nostrum does further harm to the extent that it leads people to believe that a pain in the lower part of the back indicates kidney disease. As all well-informed physicians know, it does nothing of the kind.⁸

*Nuxated Iron*⁹ has been advertised to have "valuable blood, nerve force and tissue building properties" due to "organic iron in the form of ferrum peptonate in combination with nux vomica, phosphoglycerate de chaux, and other valuable ingredients." It is indorsed by various "specialists," who upon investigation have been found to be quack doctors. An analysis of Nuxated Iron showed that in a single tablet there was only $1/25$ of a grain of iron, while the amount of nux vomica was practically negligible. If a person wants to take iron on his own responsibility, which cannot be recommended, it is possible to get iron in tablet form for about $1/25$ of the cost of Nuxated Iron.

*Tanlac*¹⁰ is a widely advertised nostrum for the cure of "all ailments of the stomach, kidneys, liver, catarrhal affections of the mucous membranes, rheumatism, nervous disorders and the like!" To comply with the Pure Drug Act, however, the manufacturers make a more modest claim on their label—that it is a "tonic and system purifier." Analysis of Tanlac shows that it contains 16 to 18 per cent of alcohol, 2 per cent of glycerine, with licorice, aloes or cascara, and gentian present in small quantities and with a trace of alkaloids. Obviously, it is a cure for nothing. Figure 45¹¹ on the following page reveals a kind of advertising used by the manufacturers. Advertised first in the South, this nostrum in 1923 had invaded New York City and other parts of the country. Modern advertising was being used and the claim made that 30 million bottles had been sold. In 1922 it was reported by the press that the business had changed hands: purchase price, \$2,000,000.

Pinkham's Vegetable Compound.—Lydia E. Pinkham died in 1883. For years after her death, however, the company's advertisements invited suffering women to confide in her and address letters for her personal attention.

Holyoke Daily Transcript.

HOLYOKE DAILY TRANSCRIPT FRIDAY, MAY 11, 1917—TWENTY PAGES

THREE IN ONE FAMILY MAKES UNUSUAL CASE

South Hadley Falls Man Relieved
of Stomach Trouble Since
Taking Tanlac the Na-
tional Tonic.

"I HAVE GAINED 10 POUNDS"

Says Fred Wicks, "and My Wife
and Son Are Also Taking Tan-
lac and Have Been Greatly
Benefited."

Health is Wealth. Health is the greatest wealth in the world—the soundest capital, the biggest asset. Without health the bloated bond holder is a pauper. With health the plodding laborer is rich. All the money in the world cannot buy this asset of health that is absolutely necessary for success of any kind. The man without health is beaten before he begins his fight. He does not even qualify for a trial. He is barred from ever trying.

Mr. Fred Wicks of 52 Granby Road, South Hadley Falls, Mass., has been relieved of stomach trouble and has gained 10 pounds in weight since taking Tanlac. His wife and son are also taking it and have been greatly benefited. Mr. Wicks made and signed the following statement at George J. Drury's.

FUNERALS

WICK—The funeral of Fred Wick was held this morning, from his home, Granby Road, South Hadley Falls, followed by a high mass of requiem in St. Patrick's church. Rev. J. E. Sellig officiated. The bearers were Jacob and John Miller, Charles Todd, Charles P. O'Connor, John St. John and James Kelly. The burial was held in the St. Jerome cemetery.

**TWO CLIPPINGS FROM THE
SAME ISSUE OF THE SAME
PAPER!**

**ONE SAYS "TANLAC" RE-
LIEVED MR. WICK OF "STOMACH
TROUBLE."**

**THE OTHER SHOWS THAT MR.
WICK WAS DEAD AND BURIED!**

WHICH DO YOU BELIEVE?

FIG. 45.—ADVERTISEMENT AND NEWS ITEM REFERRING TO A WIDELY USED NOSTRUM, CONTAINING 18 PER CENT ALCOHOL.

According to Notice of Judgment No. 4997, issued June 30, 1918, by the Bureau of Chemistry, of the Department of Agriculture, Pinkham's Vegetable Compound¹² was falsely and fraudulently claimed by the manufacturers to be effective as a remedy for falling of the womb, leucorrhœa, inflamma-

tion and ulceration of the womb, and many other specified ailments "when in truth and in fact it was not." The company was fined \$50. To-day (1923) it is "recommended for the treatment of non-surgical cases of weaknesses and disorders of the female generative organs"; it contains 15 per cent alcohol.

*Laxative Bromo-Quinine*¹³ has been advertised for years to cure a cold in one day. The manufacturers claim that it is "better than the ordinary quinine" because it "does not affect the head." The real reason it does not affect the head may be explained by the chemist's analysis which showed that there was practically no quinine present. To get as much quinine as is found in an ordinary dose, it would be necessary, on the basis of this analysis, to take ten laxative bromo-quinine tablets, and if that were done, the person taking the dose would get 20 grains of phenacetine (acetphenetidine), which would be a dangerously large amount.

*Caldwell's Syrup of Pepsin*¹⁴ contains 8½ per cent alcohol. Pepsin, according to a report of the Chief of the Division of Drugs of the Bureau of Chemistry, "is absent or not present in appreciable amounts. It is apparently a laxative of the senna type."

*Sanatogen*¹⁵ has been widely advertised as a nerve food which, if we are to believe the advertisements, "has brought new strength, new vitality, and new relish of life to thousands upon thousands who have suffered from starved nerves." It consists of 95 per cent casein (dried milk curd) and 5 per cent glycerophosphates.¹⁶ In two cents' worth of beans (at ten cents a pound), there is more food energy, according to a statement of the American Medical Association, than in a dollar box of Sanatogen.

Recent widespread advertising of *products alleged to contain vitamins* in concentrated form has resulted in a vicious circle—an artificial demand is created, and then the manufacturer (especially of medicinal products containing

End Stomach Ills

If, after eating, your stomach flashes Nature's warnings of danger, such as heartburn, flatulence, gas pains, dizziness,

FATHER JOHN'S MEDICINE



Weak Eyes

If your eyes are weak and work-strained; your vision blurred, if you find it difficult to read and must wear glasses, go to any druggist and get a bottle of Bon-Opto tablets.



Broke His Vow

"After trying all remedies and doctors for stomach trouble for eight long years I decided I couldn't be any longer." — J. W. Bartlett

TODAY I AM REAL WELL

So Writes Woman After Taking Lydia E. Pinkham's Vegetable Compound

Knocked Out Indigestion

lad, Says Bartlett

"Sir—I recently bought a bottle of Mentha Pepsin from a drug store in our town, and rejoice to say it has cured me of chronic indigestion. I had tried many medicines and almost given up, when a friend recommended Mentha Pepsin."

TOO MUCH URIC ACID?

USE THE WILLIAMS TREATMENT

FREE 85 CENT BOTTLE

U. S. EMPLOYEE ENJOYS WORK

Edward L. Kingle Found No Relief From Stomach Trouble Till He Tried Tanlac.

COLDS

"Pape's Cold Compound" Breaks a Cold in Few Hours

Guard Against FLU

Everywhere—all the time INHALE Soothing, Harmless, Germ-destroying, Healing

Hyomei

Hard Rubber Inhaler easily carried in vest pocket or lady's bag. Lasts lifetime. Extra bottle refiller for a few cents. Guaranteed and money-backed by all druggists.

Peoples Drug Store



To Cure a Cold in One Day

No more Rheumatism



"Suffering has gone from your face, mother!"

S.S.S. is the Great Builder of Red Blood Cells and Rheumatism Must Go Just Try It.

"Rheumatism? Not Me, indeed, it's all gone, every bit of it! It's amazing and joy for me now for the first time in years. I feel a wonderful glory again in the free motion I used to have when my days were younger. I look at my hands and think of the aches and twinges they used to have."

Kidney and Bladder Troubles Conquered

Money Back

Dr. Carey, I have prescribed your Prescription No. 1 for my kidneys and bladder.

DRUGIST MAKES AT DISCOVERY FOR INDIGESTION

indigestion and its attendant ills such as heartburn, sour stomach, flatulence, dysentery, diarrhea, colic, cramps, chronic constipation, and even sick, nervous headache, are traceable to disorders of the digestive organs and can now be cured with new cordial called "Mentha Pepsin," originated by a druggist and recommended by physicians. Secure before it is fully digested by putting into solution tablets are absorbed into the system, directly into the blood and setting the system to work. To avoid this you

NUXATED IRON

It contains iron like it in fresh vegetable like the iron in your blood.

It is an eminent physical blood preservative, standardized. It is recommended for all anemic run-down conditions. It has helped thousands of others. It should be taken for it at druggists.

Head Office: 211 E. 12th St., New York, N.Y. Agents: J. C. Kane & Co., 123 N. 3rd St., Philadelphia, Pa.



LEONARD EAR OIL

IT DOES RELIEVE DEAFNESS AND HEAD NOISES. Simply drop it in both of the ears and in nostrils. At every drug store. Special instructions by each ear specialist in each package.

FIG. 46.—A FEW OF THE MANY ADVERTISEMENTS OF MEDICINES APPEARING IN THE DAILY PRESS, MOST OF WHICH ARE WORSE THAN WORTHLESS.

vitamins) excuses his business on the ground that he is merely supplying a demand. And so vast sums of money are being spent in the advertising and purchase of yeast and medicinal products asserted to contain vitamin-concentrates, when ordinary fresh foods are the cheapest and richest sources of vitamins—a simple yet definitely valuable bit of information which public health authorities have not yet disseminated among the people.¹⁷

Many interesting facts might be given regarding Wine of Cardui, Hostetter's Bitters, Jad Salts, Nature's Remedy, Bromo Seltzer, Syrup of Figs and many similar remedies, but space forbids. Figure 46 displays the advertisements of a few nostrums. Descriptive material regarding all of them can be found in two volumes published by the American Medical Association entitled, *Nostrums and Quackery*.

Testimonials in Nostrum Advertising.—Testimonials are used with apparent success in bringing about the sale of nostrums. In some cases they are obtained dishonestly. An obesity cure, a mail-order swindle, published the alleged endorsement of Texas Guinan, an actress.¹⁸ It was brought out in court that Miss Guinan never saw the letters to which her name was signed, but she was paid \$500 down and \$50 a week for the use of her name. The "cure" contained 30 cents' worth of alum, alcohol, and water and sold for \$20. In many instances, testimonials for consumption cures have been obtained from persons who later died from the disease.¹⁹ Manufacturers often advertise their remedies through the use of chemists' certificates. Unfortunately, there are men who will permit their names so to be used. Willard H. Morse, M.D., F.S.Sc. (Lond.) who called himself a "consulting chemist," has endorsed an epilepsy cure, "Absorbine," an "ideal sight restorer," and many other remedies.²⁰ The degree, "F.S.Sc. (Lond.)" costs \$5.

For years "letter brokers" have done an extensive business in the purchase and re-sale of letters written in con-

fidence to various mail-order quacks. Over 140,000 such letters were written to "Mrs. Harriet M. Richard," a name under which certain quacks advertised.²¹ They were rented at the rate of \$5.00 a thousand, in bundles of 500, to other quacks in the same line of business who used them to circularize the sick. This method of obtaining a "sucker list" has been widely used.

Health Advice in Newspapers.—The nostrum advertiser has been particularly clever in defrauding the people through a fictitious "health column" in newspapers that does not appear to be an advertisement. David H. Reeder's plan was to furnish newspapers "copy" for a "health department," with the understanding that all inquiries be forwarded to him.²² Thus a "Home Health Club" maintaining a newspaper "health department" had its headquarters in the same building with the "Home Remedies Company" (with, however, a different address on its letterhead). On receiving inquiries addressed to the "Club," Reeder would advise the purchase of "Home Health Club" books, also various remedies issued by the "Home Remedies Company."

The "Doctor's Advice," by Dr. Lewis Baker,²³ is ostensibly a newspaper "health column" of questions and answers on health subjects. In reality, it is an advertisement of "patent medicines." Every "answer" recommends at least one nostrum sold by the firm that employs Lewis Baker.

The department of "Mrs. Mae Martin" called "Health and Beauty Helps,"²⁴ is an advertisement of a "patent medicine" concern. Mrs. Martin freely recommended prescriptions, one of the ingredients of which was always a "patent medicine."

Other Forms of Quackery.—For a long time medical mail-order houses did a flourishing business. Many of the more fraudulent houses have been put out of business; but at least a few small firms are still in the field. Itinerant quacks, among them "The United Doctors," have done a large volume of business. Stopping a few days in a town

after extensive preliminary advertising, they have been able to leave with many hundreds of dollars. At least two groups of "rupture experts" were touring the eastern part of the country in 1922. The operations of "men's specialists" have been particularly harmful. These scoundrels have defrauded young men out of many thousands of dollars, oftentimes in pretending to treat diseases which did not exist and in other cases giving them ineffective treatment for syphilis and gonorrhea. Most respectable English-language newspapers refuse to accept the advertisements of these quacks, who, however, still do considerable business among the foreign-born through advertisements in foreign-language newspapers and through the distribution of booklets. Thus while English-speaking men and boys have in a measure been protected against the unscrupulous activities of these "specialists," they have been permitted to exploit the ignorance of the foreign-born.

A recent issue of a magazine, edited by a United States Senator and having a large circulation in rural communities, contains three prominent advertisements of spectacles. "These splendid glasses," states one advertisement, "will enable anyone to read the smallest print, thread the finest needle, see far or near, and prevent eye strain or headaches." \$4.49 is to be remitted if the spectacles are satisfactory.²⁵

Limited space prevents the description of a multitude of fraudulent devices for the cure of disease and the promotion of health. A "physical culture bed" is a curious invention which "besides being a beautiful substitute for the ordinary bed, is a remedy ready at hand in the home in cases of asthma, intestinal stasis, floating kidneys, the falling of any of the internal organs, poor circulation, etc." The "Pandicator" is a machine for stretching the body. It is advertised for use in the home, to increase the height and to be helpful in the treatment of rheumatism, catarrh, obesity, constipation, and cramps. To the prospective customer is

sent a confidential analysis chart; and a series of follow-up letters informs him that thousands "pandiculate every day in their own homes" and "that doctors in every part of the country who have used the Pandicator endorse it wholeheartedly." "Why not order the low family machine to-day? Send us your check for \$25." A "spinographist" has no device for sale, but will provide instruction for the use of his "spinal motions" in the treatment of headache, nervousness, stomach trouble, and constipation. Exploiting the popular interest in radium, the Radium Products Corporation advertises in bold type that over 80 per cent of all cases of rheumatism, neuritis, eczema, kidney trouble, chronic constipation, and other diseases "so far treated have been positively relieved with our radium preparations." Since there are only 115 grams of available radium in the entire world, one wonders how large are the doses which produce such gratifying results.

The recent claims of Albert Abrams, a physician who has held several important positions in California, were the subject of numerous magazine articles in 1922 and aroused considerable interest.²⁶ Abrams claims that the basic components of the body are elements having vibratory motions and definite radio-activity, which vary according to the condition of the body and mind in health and disease. Each disease has its specific rate, and if the vibratory rate is produced by the Oscilloclast (Doctor Abrams's invention), the disease is destroyed. A sample of blood is used for diagnosis; it must be taken when the patient is facing west in a room with subdued light and with no strong red or orange objects in it. In 1922, the instrument had been leased by some 350 followers, including 217 physicians and 132 osteopaths. Although the Oscilloclast is not for sale, it can be rented for an initial fee of \$200 or \$250 and a monthly rental of \$5. The person leasing it must sign a contract that he will not open it! The claim is made by one writer and admirer of the Abrams theory that a great num-

ber of physicians using the instruments are enjoying incomes of \$1,000 to \$2,000 a week. "Progress, a National Journal," issued monthly, appears to be devoted wholly to the promotion of the Abrams treatment. Doctor Abrams held clinics in Boston and New York which failed to convince members of the medical profession that cures were produced by his device. He refused to co-operate in an investigation of his method proposed in 1917 by the editor of the *California State Journal of Medicine*.

The Fight against Nostrums and Quackery.—Among the first persons to appreciate the extensive harm done by nostrums and quackery were the editors of *The Ladies' Home Journal* and *Collier's Weekly*. These magazines enlisted the assistance of Mark Sullivan and Samuel Hopkins Adams, and conducted vigorous and effective campaigns in an attempt to enlighten the people of the country regarding the true nature of the business. Later, when the fraudulent nature of some eight or ten firms was exposed in Portland, Oregon, various papers quickly responded and voluntarily gave up many thousand dollars worth of advertising. As a result, these firms soon closed their doors. The *Chicago Tribune* did aggressive work in running out of that city several firms of "specialists" in the private diseases of men. The *New York Tribune* also has done effective work in this field.

One of the largest mail-order houses in the country, prior to 1912, had been advertising patent medicines. In its 1912 annual catalogue,²⁷ however, it issued a statement to its customers to the effect that it had decided to discontinue their sale. "We find," states this firm, "valueless and even dangerous medicines offered to the public through the medium of advertising that is extravagant, misleading, and deceptive—advertising calculated to deceive the well into the belief that they are sick and to induce the sick to pin their faith to ineffectual means for recovery. . . . Therefore, we have decided to restrict our line of drugs and medicines to

those officially approved by the leading drug and medical associations . . . the United States Pharmacopeia published by the authority of the United States Pharmaceutical Convention, the National Formulary issued by the American Pharmaceutical Association, and the new and known official remedies accepted by the Council of Pharmacy and Chemistry of the American Medical Association. The Pure Food Law has made the first two of these publications the standard for all drugs and medicines in this country."

The Bureau of Chemistry of the Department of Agriculture, as has already been observed, has been effective in the suppression of fraud in the advertising and sale of nostrums. The chief weakness in the Pure Food and Drug Act, under which this work is done, is that, while the act prohibits the use on bottles of labels which make false claims, it does not prevent the most extravagant advertising in newspapers; it is even permissible under the law to inclose with the bottle a circular claiming far more for the nostrum than does the label.

The Post Office Department, by withholding the use of the mails from persons and firms guilty of fraud, has also been effective in the fight against quackery. A few years ago a device known as the Oxypathor,²⁸ consisting of a brass cylinder filled with sand, clay, charcoal, and similar materials, with flexible cords attached to "treating plates," was widely advertised as a "thermo-diamagnetic" instrument which, when attached to the human body, alters its magnetic properties, greatly increases its affinity for oxygen, and its capacity to attract and absorb the oxygen of the air. It was claimed that the "Oxypathor" would quiet the most agonizing pain, cure appendicitis, and practically every disease. The instrument sold for \$25, and \$35. From 1909 to the date of trial, the company sold over 45,000 instruments. A fraud order was issued against the company in 1915 depriving it of the use of the mails. The chief exploiter of the device was sentenced to eighteen months in the federal peni-

tentiary. This is only one of many firms against which such orders have been issued by the Post Office Department.

The Committee on Drugs and Nostrums of the American Public Health Association recommended in 1921 uniform state laws for the control of the sale of drugs;²⁹ it believes they should be enforced by persons with a broad health point of view. Food and drug laws now appear to be enforced, in most instances, by state departments of agriculture, the interests of whose agents are mainly in agriculture, with the result that they naturally neglect the control of drugs and nostrums. The Committee also recommended better advertising laws. "No earnest or concerted effort at co-operation with advertising interests has been made," states the report of the Committee, "in the attempt to exclude fraudulent proprietary advertisements in high-class publications." The committee believes further that no drug should be manufactured without a license from the state, and that before a license is issued the manufacturer should submit formula, label and copy of advertising for the proposed drug and a laboratory examination should be made by the state health authorities.

The So-Called "Doctors' Trust" and Its Attitude Towards Nostrums.—Efforts to control the advertising of nostrums by legislation have met with strong opposition on the part of advertisers. A bill of this nature, for instance, was introduced in the Michigan State Legislature. Immediately a letter³⁰ was dispatched from an advertising agency to every druggist in Michigan, reading in part as follows:

Please write or wire members of your State Legislature to use every legitimate influence to kill Michigan House Bill No. 187 by Littlejohn so-called formulæ disclosure registration and license bill would result in withdrawal of all advertising and sale of package, household medicines, cosmetics and hair tonics in your state. That is result desired by members of doctors trust who are responsible for and back of this same bill in twenty different states and defeated every time. We believe doctors trust thinks

they control the Michigan Health Department. Withdrawal of advertised package medicines and household medicines would result in inevitable increase in useless, dangerous and needless operations and would compel a doctor's fee in every slight ailment. It is monstrous, vicious, mercenary and puts life and death in hands of political doctors without restraint, law or competition. The true object of this bill is to kill self-medication and compel your people to pay doctors fee in every slight ailment. The privacy of homes of people of Michigan in great danger. No possible good can result from this legislation. . . .

Soon after, the State Dairy and Food Department of Michigan issued a circular³¹ regarding the proposed bill stating:

The State Dairy and Food Department is charged by law with the inspection of all drugs and medicines as well as food in this state. It is made the duty of the department to find out what people put into their stomachs for medicines as well as foods. There are several thousands of proprietary remedies on the market. Many of them have merit, some are useless, and some are plain frauds, like the consumption and cancer cures. To analyze and inspect all these remedies would cost the state a great deal of money and yet the people should be protected from imposition in the medicine line. The State Dairy and Food Department, after careful study of the situation, drafted a bill to meet the situation fairly for all concerned. House Bill No. 187, introduced by Representative Littlejohn, is not the product of any so-called "Doctors' Trust." It was drawn by the Dairy and Food Commissioner. No doctor except Representative Littlejohn ever saw it before it was introduced. No doctor was consulted in the drafting of it. It is being misrepresented by advertising agencies and others as a "formula disclosure" bill. There is not a line in it compelling the disclosure of any formula. The bill simply provides that manufacturers of proprietary remedies shall register the names and furnish a sample of their product to the Dairy and Food Commissioner. This saves the state the expense of traveling inspectors to pick up the samples. . . .

The opposition of organized groups of physicians to the sale of nostrums and to other illegitimate and misguided measures in the field of curative and preventive medicine has

brought them a great deal of thoughtless criticism. They are charged with seeking selfishly to protect their own business. As a matter of fact, much of the advertising in this field tends toward the development of imaginary diseases when none exist and towards the magnification of trivial ailments. Thus the lurid advertisements of various kidney remedies are written so as to make people believe that every case of "backache" means kidney disease. Of those affected by the advertising, some respond by buying kidney pills but many more by consulting their family physicians. Doctors profit by quack advertising. Were they influenced only by selfish motives, they would say to the nostrum advertiser: "Go the limit. The more victims you get, the more patients I receive."

The American Medical Association does not oppose the sale of all remedies for self-treatment. It does believe that such products should contain no habit-forming or dangerous drugs, and that they should not be advertised for the treatment of the more serious diseases which obviously need the attention of a skilled physician. Furthermore, it is the opinion of the Association that the people should know what drugs they are buying, also that remedies should not be advertised so as to make people magnify trivial ailments and dose themselves with an unnecessary amount of drugs. Such remedies as are included in the list of the United States Pharmacopeia are found in most drug stores. They are non-secret, official, and their standards of strength and purity are maintained by state and national laws.

"When the public is properly informed," says Arthur J. Cramp in *The Journal of the American Medical Association*,³² "so that it knows what preparations to call for in order to treat its simpler ailments, advertising of home remedies will be entirely unnecessary. It develops upon the medical profession and other agencies entrusted with the solution of public health problems to give the public just these facts."

Some years ago Doctor Harvey W. Wiley suggested³³ that a representative committee should be appointed to select a few simple home remedies for a "mother's medical chest," to be used for the self-treatment of minor ailments. He suggested further that directions be published, describing the nature of ailments for which these remedies might be used, and the size of the dose under varying conditions, with emphasis on the dangers inherent in self-diagnosis and self-treatment.

Whether such a task should be undertaken by scientific organizations, such as the American Medical Association, or an official agency like the United States Public Health Service, is a question, Dr. Cramp believes. He thinks, however, that there is little doubt that when such information has been widely disseminated, the making of hypochondriacs by suggestion and the widespread evil of unnecessary drug-ging will be done away with.

There were indications in 1922 that the manufacturers of nostrums were putting forth renewed efforts in the exploitation of the developing interest of the people in public health. While recent advertising recognizes modern conditions, such as the scarcity of alcoholic beverages and popular interest in vitamins, it is in substance the same kind of advertising that has been described in these pages. It is still influencing the public to spend millions of dollars on various concoctions which are worse than useless.

CHAPTER X

HEALTH ACTIVITIES MORE OR LESS MISDIRECTED

THE present widespread interest in the prevention of disease and the achievement of healthful, joyous living is largely responsible for the success of various cults and enterprises backed by persons, more or less informed regarding disease and its prevention, more or less sincere in the advocacy of certain health measures, and alert enough to appreciate the people's eagerness for health.

Health Magazines.—Among these agencies are a number of health magazines which emphasize the note of positive health. "Why be a weakling?" the reader is asked in one of them through an attractive full-page advertisement.¹ "Why be only half alive when you can thrill with the joy of living? Why be satisfied with a drab existence when you can be gloriously alive with sound nerves, firm muscles, and a healthy vigorous body? Why be a weakling when you can be a he-man?"

In addition to several women's magazines with health departments, and some ten or more publications dealing with outdoor sports, there were in 1923 two popular health magazines containing sound information on health subjects * with advertisements which were for the most part unobjectionable, and there were some six or more popular magazines dealing with the cure and prevention of disease and the development of health, containing articles and advertisements of questionable value. The latter were reaching many

* For a list of recommended health magazines, see page 483.

times as many persons as the former. The circulation of one of them was 225,000 (net paid) at the end of 1921, and at that time it was increasing from month to month.

A review of the contents of these magazines of questionable value is illuminating. They constitute an interesting combination of the good and the bad. In some instances, the advertisements have much the same appearance as contributed articles. In a recent issue of one of these magazines appears an attack on "Vaccination—The Giant Delusion." The author states that vaccination has been responsible for more deaths than smallpox itself. "Why has the most intensely and thoroughly vaccinated country in the world," he asks, "suffered most severely from smallpox?"² There appears in the same issue an article on syphilis with the portrait of a fine-looking young man, "who accomplished his own cure of an undoubted case of syphilis through fasting and the milk diet." "Meantime," the article continues, "Mr. Bernarr Macfadden is carrying on an experiment demonstrating with a number of cases, giving free treatment along these lines, the efficacy of natural methods and their superiority over the conventional drug treatment of this malady." In another issue, the work of the American Society for the Control of Cancer is condemned,³ and there appeared a few months previously a statement by the editor regarding this disease. "I believe," he said, "that every case of cancer that has not advanced too far can be cured with diet, spinal stimulation, and a general vitality-building regimen."⁴ Another article suggests a milk diet for locomotor ataxia. One patient taking this treatment writes: "I am now able to dance for hours at a time and walk many miles each day."⁵ And an editorial in another issue tells of a man who cured himself entirely of consumption by the vigorous use of a horse brush on his skin.

Innumerable advertisements, also, are to be found in the same magazine of health books, foods, courses of physical development, body appliances, and various devices.¹ The

schemes of only the more ambitious advertisers using one or more full pages can be even briefly set forth here. One is a "physical and health specialist": "Build up your body and brain and get the joy out of living," he urges, "let me help you as I have thousands of others. Accept my hand in friendship as you would a brother's, and I will show you nature's way back to health and happiness. The principles of Strongfortism are based on my discovery—that internal muscular harmony and strength is the key to lasting abundant health and vitality. The heart, lungs, stomach, bowels, and other vital organs function through virtue of a contracting power of the muscles contained in their structures. . . . Once you accept Strongfortism you enter a new life. The results are immediate and positively thrilling. You feel the rich blood racing through your body—you feel new poise and a magnetic personality—you can't fail with Strongfortism. I guarantee it." A "free consultation coupon" is attached and the opportunity is given for the sufferer to check one or more of several disorders, including asthma, lumbago, rheumatism, drug addiction, female disorders, prostate troubles, deformity, and lung troubles. On another page, we are told how "science's newest wonder child"—psychoanalysis—"is remaking the failures of men and women into glorious success." An amazing new method now enables you to psychoanalyze yourself. In another advertisement, by means of a well-drawn and interesting diagram of the human body, the reader is informed of the number of deaths per year from various diseases, and an opportunity is afforded for the remittance of twenty-five cents in stamps to cover the postage on a "free sample health building record" giving two of Walter Camp's famous daily dozen exercises, also a free chart containing actual photographs and simple directions for doing the exercises. Edwin Checkley publishes a photograph of himself in the nude, and states that his book, Checkley's *Natural Method of Physical Training*, is "a constructive book, not a preachment against tobacco,

liquor or other indulgences, but a careful, detailed explanation of . . . a certain way of walking that gives you a back of wonderful strength, a certain method of 'costal' breathing that produces a high-arched chest and lungs of great capacity and high quality, and, most startling of all, a certain angle at which to carry the hips that absolutely prevents the accumulation of abdominal fat." "Why exercise fifteen minutes a day for the rest of your life?" asks Mr. Checkley. "It is not necessary; the wild animals do not train. The lion keeps its wonderful strength without extraordinary effort. Mankind can do the same thing." On one page R. L. Alsaker, M.D., publishes a paid advertisement on high blood pressure, and on another page a similar advertisement on catarrh; each has some of the appearances of an authoritative contributed article. In the latter he states: "If you want to free yourself forever from catarrh, asthma, hay fever, coughs, and colds, you can do so. Dr. Alsaker's treatment is not experimental. It is proved-out and time-tested. And it includes no drugs or serums, sprays or salves. And it costs nothing to follow, while doctor's bills, prescriptions, and so-called patent medicines that do not cure soon eat a big hole in any man's income. Send for this book to-day." The road to health is attractively set forth through an interesting description of "Vi-Rex Violet Rays" for the treatment at home of asthma, eczema, nervousness, paralysis, rheumatism, and many other ailments. And on the back cover page the Vitamine Research Association, through the use of various interesting illustrations and skillfully prepared text, gives the reader considerable information (or misinformation) regarding this subject of much popular interest. Lack of space prevents a description of some twenty or more additional full-page advertisements, attractively setting forth other plans for building up the health of the nation.

In a subsequent issue of this magazine, the editor proposes to establish a "Health Director Community Service," each

director to have four functions: (1) maintaining an office for consultations, (2) giving weekly lectures, (3) keeping a library of physical culture and health books, and (4) giving advice to members of families subscribing to the service.⁶

What is the net effect of the widespread circulation of magazines of this kind? Many of the articles and pictures surely have a stimulating influence, particularly among young people. Frequently excellent articles appear. Among the authors are Dr. Frank Crane, Senator Arthur Capper, and Charles W. Paddock, the famous sprinter.⁷ In one issue appears an editorial and a two-page article on "National Physical Culture Week." A particular time is designated for taking stock of our human resources and their improvement, and the movement appears to be endorsed by General John J. Pershing, Secretary of Labor James J. Davis, Dr. Royal S. Copeland, Senator Arthur Capper, Douglas Fairbanks, and Mary Pickford. Undoubtedly, many are led to undertake helpful systematic exercise and to participate in various forms of outdoor sport. Most boys will not read without benefit an article by one of America's greatest sprinters, but can people attempt to "conquer constipation" by sending \$7.50 for "Dr. Booth's Internal Bath Appliance" without the establishment of faulty habits and without making their condition worse? That many readers purchase the appliances, the books, and the advice of these advertisers, is apparently indicated by the continued purchase of space, at least by a few of these exploiters, at the rate (in the particular magazine just described) of \$625 and upward per page. It should be repeated that the magazine in question contains much good material. Articles condemning vaccination and advocating the milk diet as a cure for syphilis, however, are doubly vicious when they appear in the company of other articles by widely known and reputable writers.

Osteopathy.—Dr. A. T. Still founded osteopathy in 1874, on the theory that within the body are found all the elements necessary to health, and that, if the circulation is

unimpaired, these elements will be distributed through all parts of the body and health will result. According to osteopathy, the circulation is impaired by disturbances of the vasomotor nervous system (the nervous mechanism controlling the size of the blood vessels), which disturbances are caused by pressure of vertebræ, muscles, or ligaments on the nerves in the region of the spine. Treatment consists in adjustment to relieve pressure.⁸

Although the osteopaths maintain research laboratories in California and Chicago, no convincing evidence has yet been presented to support this theory and to show that osteopathic treatment cures disease. The massage which they give appears, however, to be helpful in the treatment of some conditions. Many persons credit osteopathy with the cure of various sicknesses, not realizing that one recovers from most diseases without any treatment whatsoever.

Many of the osteopaths, however, do not adhere strictly to the original theory, but combine with osteopathy a general knowledge of medicine. Their textbooks recommend the use of diet and surgery. Occasionally an osteopath is found with an M.D. degree. Few of the younger practitioners claim that osteopathy replaces medicine. They believe, however, that it may be used in connection with other therapeutic agents, such as drugs, surgery, serums, vaccines, hydrotherapy, mechanotherapy, and massage. Whether osteopathy may so be used has not been established. It is hoped, however, that investigations inaugurated in 1922 by a committee of the Massachusetts Medical Society in the Peter Bent Brigham Hospital and other institutions may throw some light on the problem. Osteopathy is not growing as rapidly as is chiropractic.

Chiropractic.—B. J. Palmer, a mesmeric healer, was the founder of chiropractic. He believed that all disease was caused by pressure on nerves leading from the spinal column. (See Figure 47). Treatment consists in manipulation of the vertebræ to relieve the pressure. Apparently, chiropractors

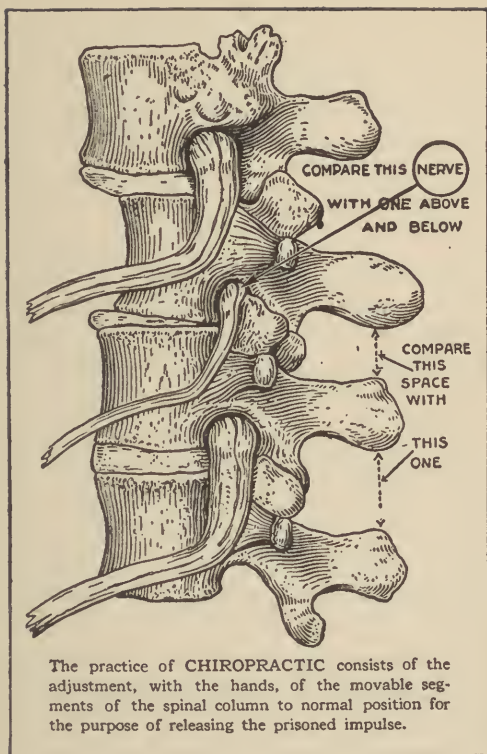


FIG. 47.—FACSIMILE OF AN ILLUSTRATION FROM AN ADVERTISEMENT OF THE UNIVERSAL CHIROPRACTORS ASSOCIATION, WHICH ASSERTED (IN MAY, 1922) THAT THERE WERE THEN 10,000 CHIROPRACTIC PRACTITIONERS IN THE UNITED STATES.

The theory of chiropractic explained by the illustration is false, medical men assert. The business flourishes, apparently because the people have not been sufficiently educated regarding the human body and its care to recognize such fallacies.

are not interested in research as are the osteopaths, and an examination of chiropractic literature does not reveal any evidence of investigations, scientifically establishing that treatments given by chiropractors bring about any change in the position of the vertebræ and a cure of disease. Many of these practitioners appear to believe that chiropractic should supersede medicine. Condemning surgery, they claim that germs are not dangerous except where nerves are pinched and the organs to which they lead are not functioning properly.⁹

Chiropractic appears to be growing by leaps and bounds.¹⁰ It is difficult to estimate the exact number of chiropractors now practicing. In an advertisement,¹¹ published May, 1922, by the Universal Chiropractors Association, it was stated that there were 10,000 practitioners in the United States; and a statement was made in February, 1923, that, at the close of 1922, there were 19,000 in practice.¹² This later figure probably covers a larger territory than the United States. Prior to 1922 the chiropractors claimed to be treating 1,000,000 persons, who were paying them fifty to sixty millions of dollars annually. One school, it has been stated, recently had an enrollment of 2,000 students from which the institution derived an income of \$1,000,000.¹⁰ There were at the beginning of 1923 approximately 3,500 students enrolled in six schools recognized by the Universal Chiropractors Association.¹²

The chiropractic business is highly commercialized. A publication issued by one school contains letters written by graduates. Most of the writers boast of the money they are making. One man describes a trip through Texas: "One of the chiropractors told me," he writes, "that in the town where he was practicing he was formerly a carpenter and last year he made \$8,000 in his practice. This is only one of many examples that I might cite to show how many of these boys have started in very minor positions and are now riding in their autos, a thing they never dreamed possible a

few years ago." Another graduate says: "Tennessee is in need of at least 500 good chiropractors and I can locate that many in good towns where the income would be from \$300 to \$1,000 per month.

In front of a chiropractic college in New York City, a man mounted on a box was recruiting students several nights a week during the summer of 1921. Waving a dangling chain of bones over his head, he shouted: "Young man, be a chiropractor. There is no better calling in the world. We need 10,000 more chiropractors this very minute. Think of the sick and suffering people in this country to-night who still are taking poisonous drugs from fool doctors. Well, those fool doctors are going to be thrown out and the chiropractors are going to take their places. So, my young man, grasp the opportunity. Be a chiropractor. Go upstairs . . . and register."

At a convention of chiropractors in Montana, Mr. Palmer, of Davenport, Iowa, "the fountain head of chiropractic," explained to local newspapers,¹³ "Our school at Davenport is established on a business basis. . . . It is a business where we manufacture chiropractors. They have got to work just like machinery. A course in salesmanship goes along with their training."

One school issues an advertising circular entitled "Acres of Diamonds, Mountains of Gold." "With the opening of the twentieth century," it states, "a new gold and diamond mine has been discovered, one that very few know about as yet, and one that, as soon as reports of its worth spread far and wide, will emulate the gold and diamond rushes of other days. This new discovery is a branch of the healing profession that offers as many golden opportunities to the pioneer as ever the gold and diamond mines held forth as a prize. And the beauty of it is that success here is assured without hardships and the strife of mining towns."

Does chiropractic ever cause positive harm, or is there merely a doubt regarding the effectiveness of treatments? A

boy living in New Jersey injured his foot, and his parents sent him to a local chiropractor. The practitioner examined the back, but, did not look at the foot. He gave several treatments until the foot became so bad the father insisted that he look at it. Nothing was needed, he said, except more treatments of the spine. The foot became worse and the boy was taken to a physician who discovered a malignant cancer. The entire leg had to be amputated and the boy died.

On Staten Island, a chiropractor was arrested for attempting to treat a baby with pneumonia. On the witness stand the chiropractor made the following statement: "I found first what we call a hot box and that was in the region of the fourth and fifth dorsal. I found that to be subluxated, so I adjusted that. That was all I did."

"Did you tell the mother that the baby was suffering from anything," he was asked.

"I said it might be teething possibly," was the reply, "but I did not make any diagnosis."

Claims apparently are made by chiropractors which are not justified by the facts. Thus, an advertisement was scattered throughout the country, filling a whole page of at least one newspaper in Arkansas. It described the sickness of an eight-year-old girl which had baffled scientists, and claimed she was suffering from a strange malady which had caused her to talk for over 212 consecutive hours, and prevented solid nourishment for nine days. A chiropractor, gaining the consent of the parents, found the second and fifth vertebræ in the child's spinal column out of position and adjusted them. In a short time, according to the advertisement, the child's fever subsided, and later she completely recovered. An investigation of the case is recorded in *Minnesota Medicine* in its issue of April, 1921. The statements in the advertisement are asserted to be false; the child was not suffering from a strange talking sickness, but from a form of encephalitis; the treatments did not cure the disease, nor

had they any appreciable effect on its course. The nurse's record indicates that the chiropractor gave adjustments from February 12th to 23rd, after which he was dismissed, the patient's condition showing no evidence of improvement.¹⁴

Chiropractic Schools.—In their campaigns for new students, chiropractic schools assert that the prerequisites are not high. One school states in its eighth annual catalogue, "Any man or woman of average intelligence who has had a common school education may acquire a thorough, complete, and efficient knowledge in the art and science of chiropractic by means of the instruction imparted in the correspondence course in chiropractic of the American University."

"The new chiropractor," the announcement continues, "does not have to wait and fight for the crumbs as does the new drug doctor. On the contrary, the demand for capable chiropractors runs ahead of the supply and the demand is increasing in a greater ratio than the new supply. The public is rapidly discarding drugs, and the people are anxiously seeking for capable practitioners of drugless healing."

There are night classes in almost all chiropractic schools for those who have other occupations during the day. In one class visited by a writer for *Leslie's Weekly*, there were two barbers, one chauffeur, three automobile repairmen, one waiter, and two butchers.

The director of one of the state venereal disease clinics in Iowa wrote in 1920 that the clinic then had many patients *who were students in chiropractic schools*.

The Palmer School of Chiropractic of Davenport, Iowa, appears to be an enterprising organization, eager for such publicity as may win the favor of the people. It maintains a high-powered radio station, one of the best heard in the East, and daily broadcasts music, market reports, and other material, and on Sundays, church services and chimes. The station is licensed as a "Class B station," receiving that classification from the Department of Commerce. It is offi-

cially designated as a commercial broadcasting station co-operating with the Federal Government.

In fairness to the more cautious chiropractors, it should be stated that many do not approve of some of the methods which have here been described. Most practitioners now will not admit that they consider their system of healing a cure-all, though some say that it will cure every case that is curable. Among the more conservative chiropractors are found those who believe that some cases require surgery; some strongly condemn the correspondence school. The other extreme is represented by the dean of one college, who states: "I do not believe that a physician or surgeon should be allowed to come near or touch the human body . . . the poorest chiropractor or naturopath is better than any ten M.D.'s put together." Between these two extremes lies the extensive middle ground of chiropractic opinion and policy.

Chiropractic and the Law.—The province of Ontario, in 1915, appointed Mr. Justice Hodgins, of the Supreme Court of Toronto, as a special commissioner to look into all matters relating to the practice of the healing art.¹⁵ The commissioner presented a thorough report of his investigations, in which he makes the following statement regarding chiropractic:

Their repudiation of all modern scientific knowledge and methods is such that it would be impossible to recommend any way in which they could be allowed to practice by which the public could be safeguarded. Their case was well presented, but was definitely Ishmaelitish. Those who appeared before me saw no necessity for preparatory qualifications, ridiculed and repudiated diagnosis, bacteriology, and chemistry; admitted that a chiropractor acts in all cases on his cardinal principle, without examination.

In sentencing a chiropractor of Canton, Ohio, to sixty days in the workhouse, a judge stated: "The logical result of permitting you to practice medicine without a certificate from the state board would be to lower the standards of school teachers, druggists, physicians, and every other class

necessary to maintain an orderly régime of civilization and wholesome living—in short, to open the doors for all charlatans to prey on the suffering.”

On March 27, 1922, Chief Justice William H. Taft, of the United States Supreme Court, presented a decision upholding the laws of Ohio, which require chiropractors to meet the same requirements as others engaged in the art of healing.¹⁶ In New Jersey, by an act of March 31, 1921, an earlier act creating a chiropractic board was repealed, and a chiropractor was placed on the general medical licensing board.¹⁷

Chiropractors practiced under a special license at the beginning of 1923 in the following twenty-two states:¹⁸

Arizona	Kansas	North Dakota
Arkansas	Maryland	Oklahoma
California	Minnesota	Oregon
Connecticut	Montana	South Dakota
Florida	Nebraska	Vermont
Georgia	New Hampshire	Washington
Idaho	North Carolina	
Iowa	New Mexico	

In other states they then practiced without such a license. Here they have been prosecuted, and they anticipate more trouble. The Universal Chiropractors Association has been organized for mutual protection. The announcement of one school contains the following: “When a graduate leaves the school he joins the U. C. A. From that moment we guarantee him the legal right to practice or we will, through process of law, know the reason why. The U. C. A. agrees to pay all the expenses of your trial and to see that you continue to practice until such time as the United States Supreme Court says such is unconstitutional.”

Christian Science.—Christian Science was founded by Mary Baker Eddy. She states:

In the year 1866, I discovered the Christ Science or divine law of life, truth, and love, and named my discovery Christian Science. God has been graciously preparing me during many years for the reception of this final revelation of the absolute divine principle of scientific mental healing.²³

The attitude of the Christian Scientists towards disease is set forth in *Science and Health* as follows:

Man is never sick, for Mind is not sick and matter cannot be. A false belief is both the tempter and the tempted, the sin and the sinner, the disease and its cause. It is well to be calm in sickness; to be hopeful is still better; but to understand that sickness is not real and that Truth can destroy its seeming reality, is best of all, for this understanding is the universal and perfect remedy.²⁴

The apparent effectiveness of drugs is explained by the following passage from *Science and Health*:

When the sick recover by the use of drugs, it is the law of a general belief, culminating in individual faith, which heals, and according to this faith will the effect be. The chemist, the botanist, the druggist, the doctor, and the nurse equip the medicine with their faith, and the beliefs which are in the majority rule. When the general belief endorses the inanimate drug as doing this or that, individual dissent or faith, unless it rests on Science, is but a belief held by a minority, and such a belief is governed by the majority.²⁵

"Believing that man is never sick," the Christian Science practitioner does not recognize the communicable diseases. A doctor of medicine was requested by a Christian Science friend to "take a look" at his child four years of age. It was immediately apparent that the child had measles. The physician, not wishing to incur his friend's displeasure, explained to him the danger of pneumonia, complications of the ear, and similar end results and reminded him of his duty to his neighbors. Believing that a Christian Science practitioner could do no harm, the physician told him that if he

wanted one to call him in. When the healer came, he ridiculed the idea of measles, ordered the child to play in the streets, and said that prayer would bring a cure. As a result, the child developed lobar pneumonia and empyema and died; a neighbors' two children and a cousin visiting the family developed measles.²⁶ Probably many practicing physicians can point to instances in which avoidable death has resulted through the dependence of the family upon a Christian Science practitioner.

While some of these healers observe the law requiring the reporting of infectious diseases, even though such observance conflicts with their religious beliefs, the refusal of others to do so is probably responsible, at least to some slight degree, for the spread of infectious diseases. Nevertheless, Christian Science has not met with any organized opposition from physicians or from public health authorities. The clergy have been more active in opposing its progress than have physicians.

There has been apparently a steady growth in Christian Science especially during recent years, both in the number of members and in the number of churches, although it is impossible to get accurate data, numerical reports of church membership being forbidden by Article VIII, Section 28 of the Manual of the Mother Church. However, in the June 15, 1918, issue of the *Christian Science Sentinel*,¹⁹ it is stated that 50 new branch organizations were added during the preceding year, showing a total of 1,776 Christian Science churches and societies, also an increased number of those devoting their entire time to the practice of Christian Science—a total, at the time, of 6,131 such persons. Each of the annual numbers of the *Sentinel* since then indicates progress. In 1920,²⁰ it is reported that

The growth of our movement during the year just ended has been most gratifying. Through our experiences of the past, we have every reason to look forward in confident expectation

to a glorious future. As so well stated by Mrs. Eddy on page 323 of *Science and Health*, "Through the wholesome chastisements of Love, we are helped onward in the march towards righteousness, peace, and purity, which are the landmarks of Science. Beholding the infinite tasks of truth, we pause,—wait on God. Then we push onward, until boundless thought walks enraptured, and conception unconfined is winged to reach the divine glory."

and the 1922 report states that

The Christian Science movement has never experienced a spasmodic or abnormal period of growth, but has steadily increased in numerical strength, as the natural result of growth in spiritual understanding. We are grateful to report that the admissions to our membership this period are next to the largest number in the history of the church.²¹

This report states that the total number of recognized branches of the Mother Church was at that time 2,001. The 1922 *World Almanac* reports 4,342 church edifices used by Churches of Christ (Scientist), and 317,937 members.²² No explanation appears available for the apparent discrepancy of figures.

The growth of Christian Science represents a protest against the failure of medicine to deal in a broadminded, adequate way with functional disorders. The brilliancy of the achievements of medical science in the fields of surgery and in the control of infectious diseases has blinded many of the great leaders to the significance of mental influence in the cure and prevention of disease. Christian Science has doubtless relieved many persons suffering from functional disorders. It has rendered one great service to the nation's health. It has shown that medical science, if it is to deal intelligently with disease, must give more adequate attention to the development of psychotherapy, and—what is more important from the standpoint of public health—to the development of mental hygiene in its prevention. Some physicians use suggestion to cure minor ailments, also major

disorders, as serious as blindness for instance;²⁷ the difficulty is that no large number of medical practitioners have been trained in the use of psychotherapy.

Health and the Retail Store.—Is it viciousness, greed, or ignorance which causes reputable business men to permit in their stores lecturers on disease and health, evidently fraudulent to those who understand the first principles of hygiene, and to invite their neighbors or their neighbors' wives to attend? Surely it cannot be due to viciousness—probably to a combination of ignorance and a somewhat excessive eagerness for profits. A leading business man of one of the large cities of the East recently introduced to his customers "Professor Munter," who gave health lectures daily for a week.²⁸ Professor Munter, he assured his customers, will not "only fully explain the numerous health advantages of the 'Nulife Corset'," but he will lecture on general topics of intimate importance to every woman. He will tell how through correct poise and breathing one may obtain happiness, beauty and health. Professor Munter claims that there is no ill that the flesh is heir to which cannot be cured under his direction. . . . He lectures so simply and plainly that even a child can understand." A news item in the same issue of the paper gives further information regarding the "professor."

In the same city a prominent drug store conducted a "big anti-pain demonstration" for an entire week and invited people generally to consult Mrs. Gene Case regarding their various ailments.²⁹ The participation of the retail drug store in the sale of patent medicines has already been alluded to; the department store, also, of course, is active in this field.

"Medical Freedom" and Anti-Vaccination.—The League for Medical Freedom, as will be seen in a later chapter, was instrumental in bringing about the defeat in Congress of the "Owen bill" which provided for the establishment of a Department of Health in the Federal Govern-

ment. It was found upon inquiry that the president of the League was B. C. Fowler of Boston. He was the ex-president of a mail order medical company, organized by a notorious quack, R. C. Fowler, his brother. The second vice-president was C. W. Miller, of Waverly, Iowa, a publisher of a newspaper carrying a considerable number of advertisements of nostrums. The chairman of the Washington (state) branch of the League was C. W. Littlefield, of Seattle, exploiter of the "Twelve Devitalized Tissue Builders" for curing all mental and nervous diseases. One of the members of the advisory board of the League was C. S. Carr, employed for years by the manufacturers of Peruna.

Although the League now appears to have passed away, another has come to take its place, "The American Medical Liberty League," ³⁰ having headquarters at Chicago. It issues pamphlets which are distributed by those who, for one reason or another, are opposed to scientific medicine. Among these publications are the following:

"Medical Health Officers Syphilizing the Nation": This leaflet declares that all vaccine virus shows the reaction of congenital syphilis and "even the vaccine scars show its contamination." The leaflet quotes as its authority for this charge Albert Abrams, A.M., LL.D., M.D. (Heidelberg), F.R.M.S. Price 45¢ a hundred.

"The American Medical Liberty League" professes to tell what the "League" is, "Why you need it" and, in large bold-faced capital letters, "HOW TO WORK IT!" Only 40¢ a hundred.

At the headquarters of the organization, are handed out copies of the *Central States Osteopath*, the official organ of the Illinois and Wisconsin osteopaths, and *Lindlahr Magazine*, issued by a "nature cure institute."

The president of the American Medical Liberty League is Charles M. Higgins, who was (and perhaps still is) the treasurer of the Anti-Vaccination League of America and the publisher of a 64-page pamphlet which informs the pub-



Courtesy of Lea & Febiger

TWO BROTHERS AND THEIR SISTER WHOSE FATHER AND MOTHER HAD SMALLPOX. THE CHILD
IN THE CENTER WAS NOT VACCINATED; THE OTHER TWO WERE

(See also page 76.)

lic "how to legally defeat vaccination the medical evil which now kills more children than smallpox." The vice-president is Eli G. Jones, who developed a few years ago a method of curing cancer which he claims has been effective in 80 per cent of all cases that he has treated. In his letters to Ohio physicians, he gave as a reference the name of Dr. C. S. Carr, Peruna's advertising expert. The secretary is Lora C. Little, a prominent anti-vaccination worker. One of the directors is W. S. Ensign, who also conducts a mail order business in Ensign remedies.*

From time to time persons like the officers and directors of the two organizations just described become active in opposing health legislation. In the fall of 1921, such persons organized a vigorous campaign in California in opposition to various health measures. There the initiative and referendum is in operation, and, as a result of the efforts of these persons, four vicious measures were forced upon the ballot so that they might be voted upon by the people in November.³¹

The purpose of one of these measures was to forbid health officers, even in times of epidemics, to exclude from public schools children who had not been vaccinated. The aim of another measure was to prohibit "vivisection or torture" of any living animal, the word "torture" being so construed by the law as even to prohibit nutrition experiments on dogs.† A third measure provided for a board to license chiroprac-

* There are about 1,000 of these remedies, and they are known by numbers. For instance, Number 675 A and B are recommended for diphtheria, and No. 260 A and B for locomotor ataxia. For bashfulness No. 186 A and B are to be used, and for disappointment in love, No. 192 A and B. The appendicitis cure was shown by the State of Michigan to contain 100 per cent. sugar. It sold for \$1.00 per package, and is estimated to have cost less than $\frac{1}{10}$ of 1 cent.

† A statement regarding vivisection, signed by the Presidents of the University of California and of Stanford University, appears as Appendix 18.

tors, which was to be made up only of chiropractors, and the other measure, for the nullification of an act previously passed by the California Legislature confining the right to use morphine, cocaine, and hypodermic syringes to persons licensed to practice medicine. Much money and effort were expended to win the support of the people to these measures. Many persons who did not fully understand their character were probably active in the campaign. There are, of course, many sincere and high-minded anti-vivisectionists, and it is possible that their support was won not only to the one measure prohibiting vivisection, but to the other measures as well. It appeared for a time that all four measures would receive a majority vote of the people; but all were overwhelmingly defeated. In November, 1922, an adroitly worded bill, providing for separate boards of chiropractic and osteopathic examiners, was voted on under the initiative, carried, and became a law. At the same election, however, an anti-vivisection bill was again defeated.³² In Colorado, also, in the fall of 1922, an anti-vivisection bill was defeated by a large majority.¹⁷

It may appear surprising that quacks, nostrum sellers, healers, and various sincere though misguided persons should be able to develop enterprises which result in an expense to the nation of millions of dollars annually. That they do, cannot be denied. Their success is due to human gullibility; they prey upon three classes of persons: first, the very ignorant, second, peculiar people who are attracted by the mystical and the occult, and third, unreasonable persons who are appealed to by the new and unusual and support the unpopular cause because it is unpopular.³³ Quackery and similar unscientific forms of treatment have endured throughout the ages, and probably will continue for many years. If chiropractors were eliminated to-day, some similar unscientific scheme of treatment would quickly develop

to take its place. The present situation, in view of the history of quackery, should not be taken too seriously. On the other hand, modern methods of advertising have made these various unscientific cults a positive menace to the health of the nation.

There are four measures, which if they could all be put into operation, would probably bring about considerable reform: (1) Medical students should be encouraged to familiarize themselves with the utilization of manipulative methods when, in the case of certain disorders, they promise to be beneficial; (2) psychotherapy should be taught in medical colleges; (3) state and federal laws dealing with nostrums and quackery should be strengthened and be more vigorously enforced, and new laws passed when needed; and (4) the people must be educated regarding the fraudulent and harmful nature of the multitudinous appliances, schemes, programs of treatment and nostrums which are now extensively advertised. To re-educate adults will be very difficult. The hope of the situation lies in the rising generation. If in the high schools and the latter years of the elementary schools, adequate courses in biology and hygiene can be taught, a great deal will be done in lessening the gullibility of the people.

A celebrated quack was visited by a former playmate from his native village.³⁴ The quack was obviously doing a flourishing business, and the old playmate asked with the frankness of early friendship how he managed to get on so well. "Thee knowest thee never had no more brains than a pumpkin," said the old friend. The quack took him to a window, and asked him to count the passersby. When the old friend had counted a hundred, the quack inquired "How many wise men do you suppose were amongst this hundred?" "Maybe one," was the reply. "Well," returned the quack, "all the rest are mine."

Education alone may develop a generation sufficiently wise in hygiene to protect itself against pumpkin-headed quacks.



PART V

THE CONQUEST OF DISEASE BY HEALTH

The end of government is the welfare of mankind.

—LOCKE.

If there be a saving at all, it is obviously this: substitute health and happiness for wealth as a world ideal; and translate that new ideal into action by education from babyhood up.

—JOHN GALSWORTHY.

The physician is the flower (such as it is) of our civilization; and when that stage of man is done with, and only remembered to be marvelled at in history, he will be thought to have shared as little as any in the defects of the period, and most notably exhibited the virtues of the race.

—ROBERT LOUIS STEVENSON.

The canker of . . . disease gnaws at the very root of our national strength. The sufferers are not few or insignificant. They are the bread winners for at least a third part of our population. . . . That they have causes of disease indolently left to blight them amid their toil . . . is surely an intolerable wrong. And to be able to redress that wrong is perhaps among the greatest opportunities for good which human institutions can afford.

—SIR JOHN SIMON.

CHAPTER XI

HEALTH ORGANIZATIONS

IN the fourteenth century, bubonic plague swept over Europe and destroyed one fourth of the population. It was called the "Black Death."¹ In 1894, it reappeared in Hong Kong and spread over much of the world in as virulent a form as the "Black Death" of the fourteenth century. In India alone, from 1896 to 1917, it killed some ten millions of persons. In May, 1907, a sailor was sent to the United States Marine Hospital at San Francisco with a disease diagnosed at the hospital as bubonic plague.² August 12th, another sailor was found with the disease; August 14th, a case was found in the city of San Francisco; and September 4th, the mayor of San Francisco sent a telegram to the President of the United States requesting the Federal Government to assume immediate control of the situation. Doctor Rupert Blue was detailed by the United States Public Health Service to take charge; and in a few days he had organized a staff of 10 commissioned officers of the Service, 13 acting assistant surgeons, 31 inspectors, 56 assistant inspectors, 102 foremen and 534 laborers. In 1900 and 1901 the Service had dealt with an epidemic in the Chinese quarter of San Francisco, involving approximately 50 cases, so was not without experience.³ The city was divided into districts, and the work of rat trapping, poisoning, fumigating, and disinfection was begun on a large scale. When a rat was discovered to be infected, the district from which it was taken was notified regarding the exact location at which it was found, and the officer in charge was instructed to

redouble anti-plague measures and to submit to headquarters a report of such efforts. With the aid of the State Board of Health and the Governor, the City Board of Health and the Mayor and various civic organizations, the situation was soon controlled. While in Europe the plague had killed its millions, at San Francisco there were only 160 cases with 78 deaths during the epidemic of 1907-8, the most serious of any in the United States. The United States Public Health Service was soon able to withdraw its forces, with the exception of a very few officers who remained to assist the State Board of Health in the eradication of rats and infected squirrels in San Francisco and adjoining communities.

Twelve years later, bubonic plague broke out in New Orleans, and a serious epidemic was threatened.⁴ Assistant Surgeon General A. J. McLaughlin of the Public Health Service immediately took charge, a conference of state health officers was held, and anti-plague measures similar to those applied in San Francisco were put into operation. As a result, only 18 human cases developed, in 8 of which death resulted. Although the people of the United States were thus threatened a second time with plague, which had many times shown its deadly results in Europe, it was quietly, promptly and effectively suppressed by the Federal Government working in co-operation with the state and local authorities; and probably 95 or more persons out of every hundred reading this paragraph are not aware to-day of the danger from which they were saved.

Such emergencies emphasize the need of the official health organizations of federal, state, and local governments. These agencies constitute the backbone of health work in the United States. The law holds them responsible for the protection of the public health. While the private agency for many years will have important functions in inaugurating new measures for combating the diseases towards which the public is apathetic; as will later be pointed out, and in developing public opinion to the point of demanding the



QUARANTINE OFFICERS OF THE UNITED STATES PUBLIC HEALTH SERVICE
BOARDING A TRANSATLANTIC LINER FOR QUARANTINE INSPECTION

incorporation of these new measures into the programs of official agencies, it is increasingly evident that private agencies only supplement the work of federal, state, and local governments, and that if the health problems of the nation are to be attacked in a comprehensive and effective manner, these governmental agencies must be equipped with the personnel and the funds for more effective leadership.

The United States Public Health Service.⁵—This is the chief federal agency in the public health field. It had its origin in the Marine Hospital Service, created by an Act of Congress, approved 1798. Its only function at first was to furnish medical care to sick and disabled merchant seamen. This work led to the diagnosis of various communicable diseases imported into the United States by seamen, and the activities of the Service were gradually extended as new needs arose. In 1902, the Marine Hospital Service became the Public Health and Marine Hospital Service, with functions considerably increased by law, and in August, 1912, the name was changed to the present one. The United States Public Health Service then acquired broad powers for the prevention of diseases among men.

The present functions of the Public Health Service are: (1) the protection of the United States from the introduction of disease from without, (2) the prevention of interstate spread of disease and the suppression of epidemics, (3) co-operation with state and local boards of health, (4) investigation of the diseases of men, (5) supervision and control of biological products, (6) the dissemination of health information and public health education.

In protecting the people of the United States from the introduction of diseases from other countries, such as small-pox, typhus fever, leprosy, yellow fever, cholera, and black plague, the Service now operates all of the maritime quarantine stations of the United States and its insular possessions, and makes medical examinations of all immigrants, 551,454 having been made during the fiscal year 1921-2.⁶

For the purpose of preventing the interstate spread of disease, it controls the sanitation of vessels and trains in interstate commerce. It co-operates with the state departments of health and other agencies and with the National Park Service. At the request of state and local health authorities, the Service conducts studies of public health administration, makes sanitary surveys, and investigates outbreaks of communicable diseases.

In investigating the diseases of man, special attention has been given to malaria, meningitis, poliomyelitis, pellagra, bubonic plague, trachoma, tuberculosis, influenza, measles, pneumonia, anthrax, hookworm, leprosy and typhoid fever.

For the purpose of research, the Hygienic Laboratory is maintained in Washington, with a personnel of approximately 120, and with excellent equipment for pathological, zoological, pharmacological, bacteriological, chemical, and physiological work.

To insure purity and potency of viruses, vaccines, therapeutic serums, toxins, antitoxins, and similar products used in the prevention and cure of disease, the inspection of the establishments manufacturing these products is made by officers of the Service, and approximately 100 such products are now systematically tested at the Hygienic Laboratory.

To keep state and local authorities, quarantine officers, and other persons informed regarding the prevalence of diseases, the Service issues its weekly Public Health Reports. Bulletins are prepared and distributed by the Hygienic Laboratory and the Division of Scientific Research for the use of all persons and agencies interested in disease prevention. In addition, millions of pamphlets regarding disease and its prevention are distributed through the general population.

Of the many achievements of the Public Health Service, a very few may be briefly enumerated: the eradication of smallpox in the Philippine Islands; the control of cholera in the Philippines; the suppression of a yellow fever epidemic in New Orleans in 1905; the control of bubonic plague in

Porto Rico in 1920, as well as at San Francisco and New Orleans; the prevention of cholera from entering the United States without interruption to commerce during the great European epidemic of 1910; the protection of the health of military forces in areas contiguous to camps during the World War; important contributions to our knowledge of yellow fever, cholera, pellagra, leprosy, measles and hookworm; demonstration work in rural and child hygiene; and the development and maintenance of a program for venereal disease control in co-operation with the various state boards of health.

The expenditures of the Public Health Service⁷ since 1880 have been as follows:

1880	\$ 402,185.49
1885	436,443.91
1890	566,848.31
1895	575,569.87
1900	1,371,758.87
1905	1,634,719.04
1910	2,020,777.34
1915	2,799,137.34
1920	5,985,705.15 ⁸
1924 (Budget)	8,737,342.00

The relation of appropriations for the Public Health Service and other federal health agencies to appropriations for all other purposes is shown by the segmented circle on the following page (Fig. 48).⁹

Other Federal Health Agencies.¹⁰—There are about 24 other agencies in the Federal Government dealing with some aspect of public health.* The Children's Bureau in the Department of Labor is authorized by law to investigate infant mortality, the birth rate, and the diseases of children. It has made various important studies in infant mortality, has issued publications on child care, and has directed

* See Appendix 12 (page 459) for full list.

an important campaign to increase birth registration. During the war, the Children's Bureau conducted a "children's year," co-operating committees having been organized in all but two states. Conferences on child welfare standards

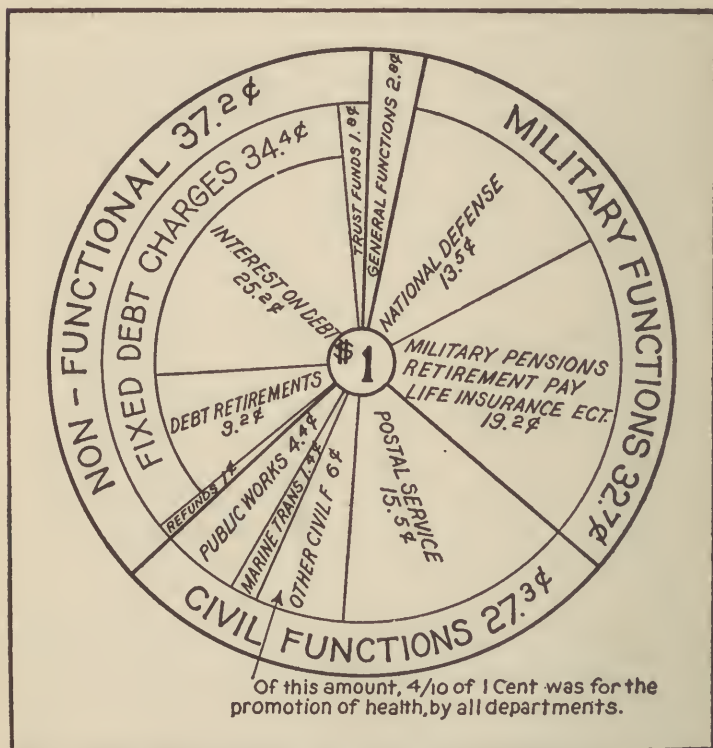


FIG. 48.—WHERE THE TAXPAYER'S DOLLAR GOES.

Distribution of federal funds, on the basis of the dollar, according to the 1923-24 Budget.

also have been held; and effective work has been done in bringing to the attention of people everywhere the importance of child hygiene. In an effort to reach rural communities the Bureau maintains a motor truck equipped as

a child-welfare station. It was operating in February, 1923, in the rural districts of Oklahoma.¹¹ A bill was approved on November 23, 1921, for the promotion of the welfare and hygiene of maternity and infancy. The Children's Bureau is charged with the administration of this work, and the Chief of the Children's Bureau, the Surgeon General of the Public Health Service, and the Commissioner of Education compose a Board of Maternity and Infant Hygiene. For each of five years beginning June 1, 1922, \$1,240,000 has been made available to the various states for infancy and maternity work, on condition that they appropriate amounts equal to their various allotments. In July, 1923, 40 states had accepted the provisions of the act.

The Division of Vital Statistics of the Bureau of Census collects birth and death statistics from states and municipalities. A state or city is admitted to the death registration area from which these data are gathered if on investigation, it is found that 90 per cent of the actual deaths have been reported; the requirement for admission to the birth registration area is similar.* In an effort to extend these registration areas, the Division of Vital Statistics is endeavoring to promote adequate registration in localities not yet admitted. Death and birth rates are published annually. Certain publications are issued every ten years, while others are published at irregular intervals. In addition, weekly telegraphic reports of deaths are received from sixty-eight of the largest cities, and are immediately published and distributed.

In the Bureau of Education is a Division of School Hygiene; and this Bureau has charge of the health of the natives of Alaska. The Geological Survey of the Interior Department conducts investigations of water supply. The Bureau of Mines, also in this Department, conducts studies of health hazards in mining, with the aid of the Public

* See maps, pages 14 and 21.

Health Service. In the Department of Agriculture is the Bureau of Chemistry, in charge of the administration of the Pure Food and Drugs Act; the Bureau of Animal Industry, which deals with diseases of animals, many of which have a direct relationship to human diseases; the Bureau of Entomology, which studies insects affecting the health of animals and crops and incidentally the health of man; the Biological Survey, which has rendered effective co-operation in the eradication of rats and plague-carrying ground squirrels; and the States Relations Service which has done effective work in the instruction of persons living in rural communities regarding problems of sanitation and personal hygiene.

The Post Office Department has an officer in charge of violations of the law prohibiting fraudulent advertising; it has been most helpful in suppressing the sale of remedies marketed under false claims. In the War Department, considerable important research work is done in the field of disease prevention under the direction of the Surgeon General of the Army; and the largest medical library in the country is maintained by the Surgeon General's office. The health work of the navy, conducted under the direction of the Surgeon General of the Navy, is confined to its own personnel.

The State Departments of Health.*—The laws of most states give the state department of health control over the sanitary work of the state. The restriction of intercourse between communities is vested in the state health department in all states except Connecticut, Nevada, and North Carolina, and in about twenty-five states the authority of the state department in dealing with sanitary matters seems to be complete.

* Satisfactory material is not available on the organization and activities of the various state departments of health. The last survey was made by Charles V. Chapin in 1914 under the direction of the American Medical Association.¹²



THE CHILD WELFARE SPECIAL MAINTAINED BY THE CHILDREN'S BUREAU
 The main picture is an interior view of the child-welfare truck, and the inset
 is an exterior view of the same car.

Prior to the World War, the trend in the administration of public health work was toward centralization of authority and leadership in the state organization. Since the war the tendency has been to build up the city and county health organizations for all work which they can handle as effectively as the state department. Developments in the future will probably be along these lines; but state departments of health, of course, will continue to have important functions in the control of communicable diseases, especially during epidemics, in collecting vital statistics, in maintaining diagnostic laboratories, and in furnishing antitoxins and serums free or at cost to those who cannot afford to pay for them.

Massachusetts, Pennsylvania and New York have health laws which provide for a considerable degree of central control. In Massachusetts, the state is divided into eight districts, and inspectors are appointed by the commissioner of health for each district. The New York law provides for a similar division of the state, but it does not cover the city of New York. Throughout the state, with the exception of this one city, city health officers may be removed for just cause by the State Department of Health, after a hearing. In Ohio, North Carolina, and other states, the organization of county health units with full time executives is encouraged, the state department assuming considerable supervision or leadership. On the other hand, in various large cities throughout the country efficient health organizations are maintained with little or no supervision on the part of the state department.

The Michigan Department of Health provides an example of efficient work administered by an organization having fairly adequate funds.¹³ Authority is vested in the commissioner, the approval of an advisory council of five members being necessary only for changes in rules and regulations. The department consists of seven bureaus and, in addition, an administrative office. The Bureau of Com-

municable Diseases and Vital Statistics assembles reports submitted by 1,700 health officers in every Michigan city, village, and township. Upon the threat of an epidemic, a study of the tabulated reports enables the department to warn physicians and others. Investigations are made, and inspectors of this bureau are sent upon request to assist local health officers or physicians in the diagnosis of communicable diseases. Six persons in this bureau give full time to the problem of venereal disease control, and the state maintains in co-operation with various cities sixteen clinics for the treatment of these diseases. A traveling clinic has been sent into 75 counties during the two years of its existence, for the examination of adults for tuberculosis and of children for various defects and diseases. Patients are instructed to return to their home physicians for treatment. The Bureau of Laboratories maintains a staff of 37 persons, 4,600 of the 5,500 registered physicians of the state sending specimens to the laboratory. Free diphtheria antitoxin and other biological products are distributed. In the northern part of the state, a branch laboratory is maintained.

The Bureau of Engineering has supervision of public water supplies and sewage disposal plants. A motor truck, operated by the Bureau of Engineering and the Bureau of Laboratories, equipped for water and milk analysis and diagnostic work, travels throughout the summer resort sections of the state with a staff of experts, to assist in the preparation of healthful surroundings for summer vacationists. In order to reduce infant and maternal mortality and improve the physical condition of children generally, a definite program is being developed by the Bureau of Child Hygiene, the head of which is a woman physician. Of particular interest is the fact that the state health department now controls the medical, dental, and sanitary work of all state penal and corrective institutions through its Bureau of Institutional Health. Four full-time dentists

are employed, and the work of a psychiatric unit is given special emphasis, 50 per cent of the inmates of these institutions having been found to be mentally abnormal. Many inmates will be released; therefore, by treating those who have venereal diseases and those who are mentally abnormal, it is hoped that considerable damage may be prevented when the time comes for discharge. On the staff of the Bureau of Education are two full-time lecturers and a writer who supplies weekly health articles to every newspaper of the state. A monthly bulletin, pamphlets, and motion pictures are provided. In one recent year, representatives of the bureau gave 652 lectures, with audiences totaling 68,662 persons. There is also a Bureau of Embalming.

In Massachusetts, the executive health officer is the state commissioner of public health. He is given a high degree of authority, and is responsible directly to the governor for the proper conduct of his office. In certain matters, however, he must obtain the approval of a "public health council." There are divisions of Sanitary Engineering, Water and Sewage Laboratories, Communicable Diseases, Hygiene, Food and Drugs, Biological Laboratories and Tuberculosis. For the fiscal year ending November 30, 1923, appropriations for the state department of health aggregated \$1,572,499. This amount included over \$1,000,000 for the maintenance of 4 tuberculosis sanatoriums.¹⁴

The Pennsylvania State Department of Health maintains the following divisions: Dental, Medical Inspection, School Health, Laboratories, Sanatoria, Tuberculosis, Genito-urinary Dispensaries, Supplies and Biological Products, Engineering, Housing, Vital Statistics, Accounts, Purchasing, Child Health, Drug Control, Public Health Education, Nurses, Newspapers. Each is in charge of a chief devoting full time to the division. The State of Pennsylvania provided over \$5,000,000 for health and medical activities for the biennial period ending May, 1923, which included \$2,500,000 for tuberculosis work.¹⁴

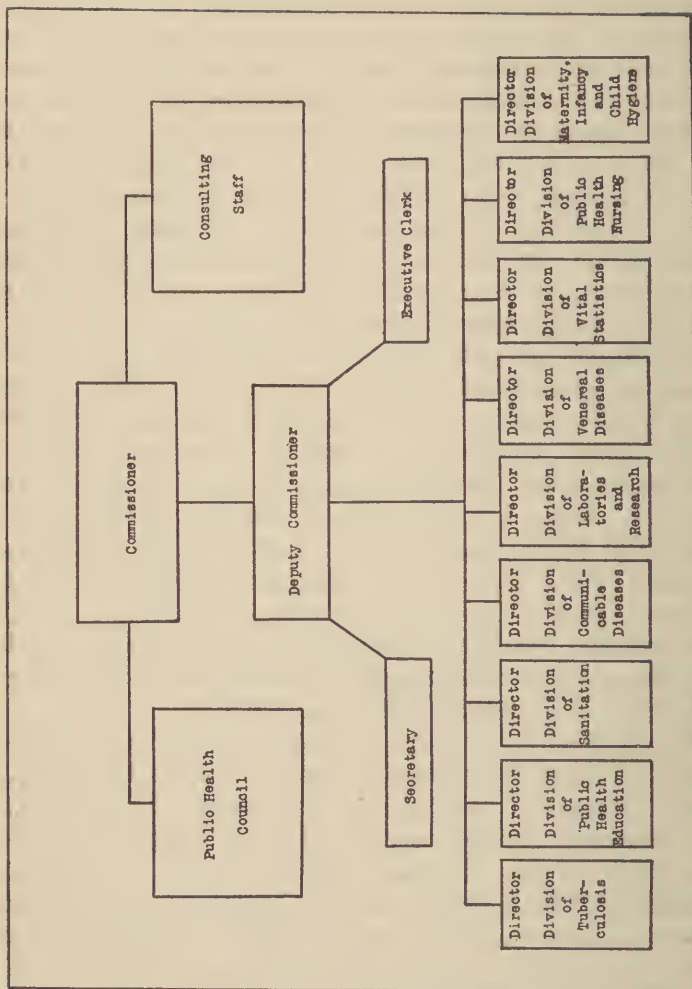


FIG. 49.—PLAN OF ORGANIZATION OF THE NEW YORK STATE DEPARTMENT OF HEALTH.

The chart on the opposite page (Figure 49) shows the organization of the New York State Department of Health.¹⁵

Figure 50 shows the amounts per capita for a year appropriated to the various state departments of health.

The appropriations made by all states combined to their various departments of health for recent years were as follows:¹⁶

1914.....	\$ 4,500,000
1916.....	4,900,000 ¹⁷
1918.....	6,500,000
1920.....	10,000,000
1922.....	11,500,000

When one considers the tremendous cost of ill health and the vast sums of money foolishly expended by the people on quackery, nostrums, and other ineffective measures, it is apparent that these amounts are both inadequate and unnecessarily small.*

The City Departments of Health.—A survey of 83 of the largest cities of the United States, conducted by a committee of the American Public Health Association during 1920-21, reveals gratifying progress during recent years and also many conditions demanding prompt improvement.¹⁸

Tuberculosis clinics are reported in 76 cities, and venereal disease clinics in 82 of the cities surveyed. For infant hygiene work there is a full time medical director in 15 cities and separate divisions in 32. There are prenatal clinics in 67, and infant welfare stations in 77 cities. All but one of these municipalities report school inspection, which, in 45 instances, is carried on under the direction of the board of education; 27 cities have a chief medical in-

* See Appendix 4 (page 446) for appropriations by states.

See Appendix 13 (page 463) for list of executive officers of state departments of health.



FIG. 50.—AMOUNTS PER CAPITA FOR A YEAR APPROPRIATED FOR THE WORK OF THE VARIOUS STATE DEPARTMENTS OF HEALTH.

See Note 15a, Chap. XI, for various explanations.

* Fees for minor service not included, as amounts thus made available were not estimated.

spector on full time, and there is, on an average, one school nurse for each 4,000 pupils enrolled. Only 7 city health departments do systematic work in the field of industrial hygiene.

It will be remembered that the spread of tuberculosis is due partially to the use of contaminated milk, also that the use of impure milk and water has been almost wholly responsible for many thousands of deaths from typhoid fever. Consequently, the inspection of milk and water is an important part of the work of municipal departments of health. All health departments except one conduct milk inspection, and in 59 cities samples for laboratory examinations are collected weekly or oftener. In 39 cities provision is made for tuberculin testing of all cows from which raw milk is sold, and in 38 the pasteurization of all milk, except that from tuberculin-tested herds, is required.

The supervision of water supply is under the control of the health department in a majority of instances (45), and in 26 cities under other departments of the municipality. Bacteriological examinations of water are made daily or oftener by 52 out of the 68 cities reporting. Probably a large proportion of the people of our more progressive large cities fail to realize how continuously and painstakingly they are protected from the attacks of typhoid fever and other infections found in water.

Food is inspected by all departments of health, and drugs by 36 out of 70 reporting on this item. Nearly all the cities report sanitary inspection, with such measures as fly and mosquito control, rat extermination, stable regulation, annual "clean up campaigns," plumbing inspection, housing inspection, and garbage collection.

Vital statistics are forwarded in 67 cities from the city board of health to the state board of health, and in 16 cities from the city clerk to the secretary of state. Only 8 cities report less than 90 per cent of births and none report less than 90 per cent of deaths.

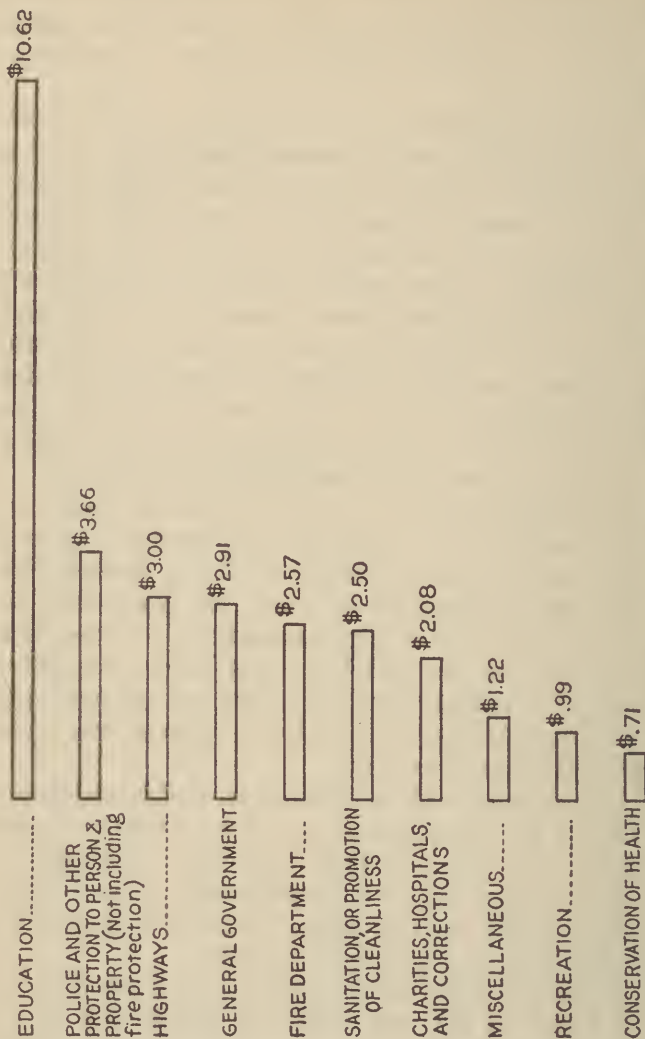


FIG. 51.—PER CAPITA EXPENDITURES OF 187 CITIES FOR DIFFERENT PURPOSES IN 1921.

Most of the cities of the United States having a population of 30,000 or more are included.
(See pp. 409-10 for explanation of terms.)

All cities have public health nursing, but in most instances the work is done in co-operation with private agencies, in no case by the department of health alone. In 14 New England cities, there is an average of 26 public health nurses to each 100,000 persons.

Definite provision for some public health education is made in 75 cities, 62 boards of health furnishing material for newspapers and 50 conducting lecture work.

It was found that an average of 52 cents per capita for strictly public health purposes is being spent by these 83 cities. The Bureau of the Census obtained reports¹⁹ from 183 large cities showing a per capita expenditure in 1921 of 71 cents for "conservation of health" (see Fig. 51).

Figure 51a shows the relative expenditures per capita of 81 of the municipalities surveyed by the association.

The influence of private health agencies on the development of public health activities by official agencies is revealed in a most interesting way by this survey conducted by the American Public Health Association. It appears that to a large degree the growth of tuberculosis clinics, infant welfare stations, prenatal clinics, infant hygiene work, and public health nursing has been due to pioneer effort on the part of private agencies. The diagram on page 230 (Fig. 52) shows the status of certain health activities at the time of the survey in respect to their administrative control.

Plans for Scoring Cities.—Rosenau gives the plans of five sanitarians for scoring cities according to the adequacy of measures carried on by their departments of health. Possibly the best for present use among cities with a population of 25,000 to 175,000 is that of the New York State Department of Health.* Of a possible 1,000 points, the scale provides the following distribution of credit:²⁰

* Charles V. Chapin prepared in 1923 for a committee of the American Public Health Associations another plan for scoring cities.

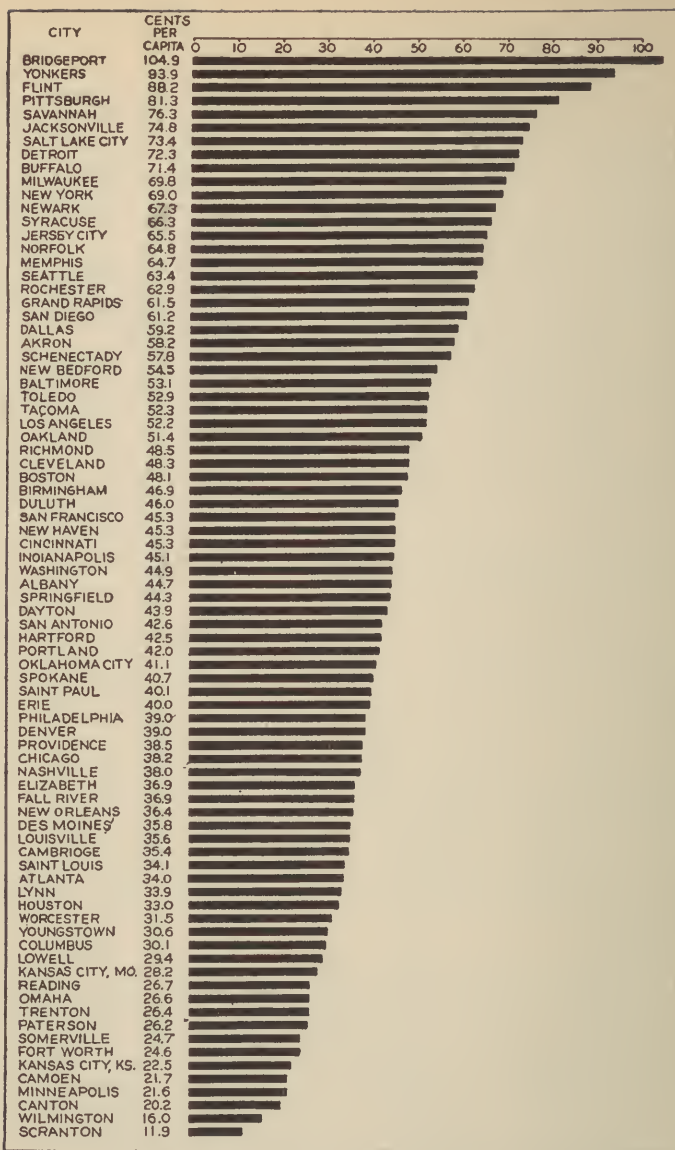


FIG. 51A.—RELATIVE ANNUAL EXPENDITURES PER CAPITA OF 81 CITIES BASED ON FIGURES FOR THE YEAR 1920 OR THEREABOUTS.^{19a}

Expenditures cover the following functional divisions: administration, communicable disease control, tuberculosis, venereal disease, infant welfare, school hygiene, public health nursing, laboratory, food inspection, sanitary inspection and vital statistics. They exclude hospital services and garbage and refuse disposal.

Communicable disease control:		
Tuberculosis, perfect score.....	60	
Venereal diseases, perfect score.....	70	
Other communicable diseases, perfect score.....	80	
Adequate laboratory facilities and use of same.....	100	
Infant and maternal welfare.....	90	
Milk and food inspection.....	100	
Water supply	100	
Sewage, garbage and manure disposal.....	40	
Record keeping	85	
Public health education.....	120	
An appropriation of at least 50 cents per capita for health protection	100	
Effective enforcement of regulations governing barber shops, common towels, drinking and eating utensils....	20	
Unusually meritorious public health work along either new or old lines	35	
Total	1000	

The inadequacy of salaries paid to city health officers has resulted frequently in inefficient work. Among those cities surveyed by the American Public Health Association, the salaries range from \$1,200 to \$10,000 per annum. In 29 cities the salary is under \$3,500. Even though virtually all municipalities considered have a population of 100,000 and over, 25 of them still have part-time health officers. It is encouraging to note, however, that 6 of the 12 largest cities pay their health officers \$7,500 or more. See following table:

POPULATION	NUMBER OF CITIES	STATUS OF HEALTH OFFICER		CITIES IN WHICH SALARY OF HEALTH OFFICER IS			
		Whole time	Part time	\$7,500 and over	\$5,000-\$7,000	\$3,500-\$4,999	Under \$3,500
500,000 and over }	12	11	1	6	3	2	1
250,000 to 500,000 }	10	9	1	0	6	4	0
Under 250,000 }	54	31	23	0	9	17	28

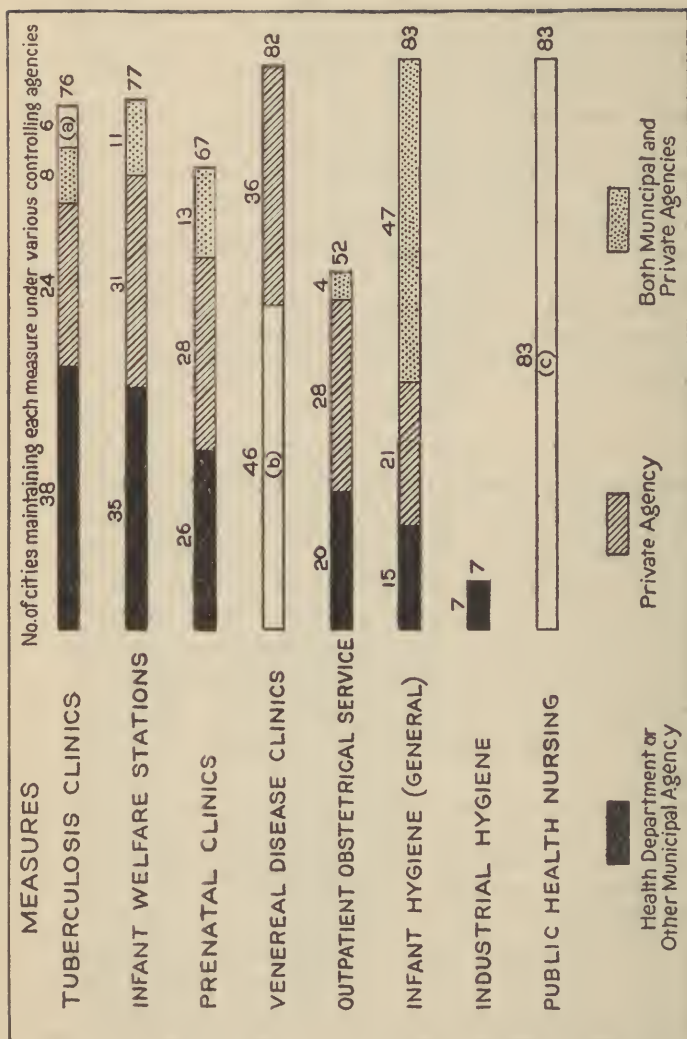


FIG. 52.—THE ADMINISTRATION OF CERTAIN HEALTH MEASURES BY PRIVATE AND OFFICIAL AGENCIES.

(a) State and county agencies.
 (b) Health department maintains or shares in maintenance of clinics in these 46 cities.
 (c) In no case is nursing service provided by health department alone, though in 71 cities nurses are employed by the department. In 77 cities, private agencies participate, and in many cities, municipal agencies other than health departments.

Of 73 health officers whose training was reported, 64 had the M.D. degree, 4 the D.P.H. degree, 3 a degree in law, and 2 had engineering degrees. The difficulties encountered in securing specially trained men is discussed later.*

County Health Work.²¹—Contrary to the opinions of many, life in country districts is not especially healthful. Hookworm disease and malaria to-day are almost entirely of rural origin, there is more typhoid and dysentery in rural communities than in cities, and tuberculosis in the country is surprisingly prevalent. The economic loss due to hookworm, malaria, and typhoid alone is estimated to be more than one billion dollars per year, and this loss falls particularly heavily upon our farming population. During surveys conducted by the United States Public Health Service in 1914 to 1916, 50,000 typical farm homes were visited, and it was found that less than 1.22 per cent of them were provided with sanitary toilets. At 68 per cent of these homes, the water used for drinking was obviously exposed to contamination from privy contents or from promiscuous deposits of human filth.

Rural hygiene is important to the entire nation's health at least for three important reasons: (1) milk and vegetables coming from rural districts may bring in disease to the cities; (2) the source of most water supplies is in the country; and (3), because of frequent and extensive travel between rural and urban communities, the control of communicable diseases in cities where half the people live cannot be achieved unless the health of the other half who live in the country is fully supervised.

Some thirty or forty years ago a boy, now an officer of the United States Public Health Service, attended school in a rural community. In winter the school building was kept tightly closed and heated with a large stove in the center. Expectoration on the floor and stove was a frequent

* See page 390.

indoor amusement. Water was obtained from an unprotected spring below a soil-polluted drainage area, or from an open well exposed constantly to pollution from a nearby pigsty and an open privy in a neighboring home. It was supplied to the children in an open pail, with one common tin dipper. No school toilets were provided; teacher, boys, and girls had recourse only to such privacy as was afforded by the surrounding woods. In 1910, conditions comparable to these existed in a large proportion of the small rural schools of the United States.

At that time Yakima County in the state of Washington had a typhoid fever rate three times as high as the average rate for the United States as a whole. In 1911, a full-time county health officer was employed (the first in the United States), and during the following three years, not a death from typhoid fever of local origin was reported from that county. Approximately 231 full-time county health officers were employed in January, 1923, among the 2,850 counties of the United States wholly or in part rural,²² in addition to a few full-time public health nurses in counties having no other organized work.*

A program for county health work, according to L. L. Lumsden, should include: (1) quarantine and bedside instruction to prevent the spread of dangerous communicable infections; (2) instruction in prenatal care and in the hygiene of children of pre-school age; (3) hygiene of schools and of other public buildings, and physical examinations and physical training of school children; (4) control of soil pollution; (5) control of insects likely to convey infection; (6) safeguarding water and food supplies and giving instruction on the principles of dietetics; (7) life-extension work; (8) organization of local clubs for instruction and training in physical development and general hygiene; (9) anti-tuberculosis work directed especially toward the dis-

* See Appendix 4 (page 446) for number of full-time county health officers in each state.

covery, and the encouragement of proper self-treatment of cases of incipient and early-stage tuberculosis; (10) measures for eradication of hookworm disease in Southern states; and (11) educational work, through lectures, printed articles, moving pictures, and other available agencies, concentrated from time to time on different specific disease problems.

Virtually all the rural health work now being done has resulted from the co-operative efforts of local and state authorities and the United States Public Health Service or the International Health Board. In some instances, both of the latter agencies have participated. When the Public Health Service starts work in a county, it is usually with the understanding that the county pay one half of the budget, the state department of health, one fourth, and the Public Health Service, one fourth. The International Health Board usually requires that the state and county together furnish one half or three fourths of the budget, the Board paying the balance.

For a community with a population of 20,000 or over, an effective program requires the full attention of a health officer, a public health nurse, and a sanitary inspector. For less populated communities, a smaller staff may be used.

Gratifying achievements have resulted from the limited amount of work thus far established. But the work now being maintained is woefully inadequate, as is suggested by the map on the next page (Fig. 53). Only 11.58 per cent of the rural population of the United States at the beginning of 1923, had local health service under the direction of a full-time health officer.²³

One of the most important programs for the development of rural health work in the United States was provided by the passage in 1923 of various health bills by the New York State Legislature. The two most important of these bills provide financial aid for rural counties whenever they

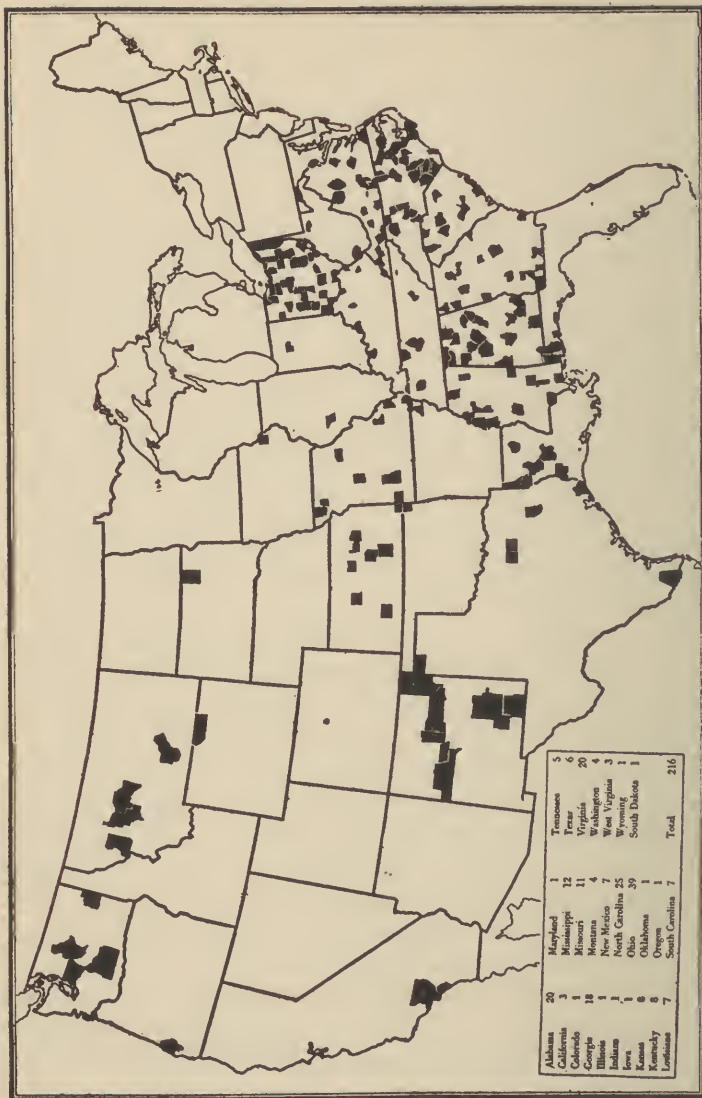


FIG. 53.—COUNTIES HAVING FULL-TIME HEALTH OFFICERS IN 1922.
Furnished by the Rockefeller Foundation.

undertake to build hospitals, establish county laboratories or embark upon any new public health project.^{23a}

A "back to the country" movement has been suggested in various popular magazines. From the public health point of view, it is undesirable to urge people to move to the country until more progress is achieved in remedying the present unfortunate conditions in rural districts.

Private Health Organizations.—Most of the permanent, constructive movements in public health, says Haven Emerson, have resulted from private initiative and later have been assimilated into official policies.²⁴ The importance of the work of certain private health agencies organized to combat specific diseases or groups of diseases has already been pointed out and reference has been made to their achievements.* Similar organizations dealing with broader fields of disease prevention and the promotion of health may now be considered.†

*The International Health Board of the Rockefeller Foundation.*²⁵—While most of the work of this organization has been done in foreign countries, it has done invaluable work in fields of outstanding need in the United States. Even in combating various diseases abroad, it has been of assistance in preventing those diseases from being brought into this country. Mention has already been made of its work in the eradication of malaria and hookworm disease. It has also furnished funds for the establishment of a School of Hygiene and Public Health at Johns Hopkins University and for another similar school at Harvard University. The Board has lent aid to the development of the work of the National Committee for Mental Hygiene and the American Social Hygiene Association. Together with the Cornell Medical School, the Foundation made plans for the establishment of a pay clinic in New York City, to be described later.

* See Chaps. VII and VIII.

† See Appendix 14 (page 465) for list of private health agencies.

The International Health Board, on various occasions, has brought groups of medical students, teachers, and other sanitarians from England, Belgium, Czechoslovakia, and other countries to study in schools of the United States. It called the conference on public health nursing education in 1921. The Board has conducted important studies in public health organization, and has maintained a division of laboratory service, with an expert in charge, for the purpose of assisting state and municipal health departments in reorganizing and developing their laboratory facilities.

While the work of the International Health Board has overlapped that of the United States Public Health Service in some instances, friction and duplication of effort have been avoided by the maintenance of a hearty spirit of co-operation. The Public Health Service has not had the funds and the personnel to enable it to meet the multitudinous needs that have developed with the growth of public health work, and has welcomed the assistance of the International Health Board.

The American Public Health Association.—This organization is composed of about 5,000 persons interested in public health work. According to a reorganization plan adopted in 1922,²⁶ the Association now consists of Fellows, "members of the Association in good standing for two years or more, who in the judgment of their colleagues are qualified by training, experience and achievement to become the leaders of the new profession"; members, those engaged in relatively minor positions in public health work; and associate members, persons interested but not employed professionally in the field of public health. One of the chief functions of the Association at present is the organization of annual meetings, which serve as an important clearing house for the exchange of information and ideas. There are general sessions, also section meetings on laboratory work, vital statistics, public health administration, sanitary engineering, industrial hygiene, food and drugs, child

hygiene, health education and publicity. The Association has done very useful work in the establishment of standards in respect to health legislation, municipal health department practice, the salaries of sanitarians, and the analysis of milk, water, and sewage. It also publishes monthly the *American Journal of Public Health*. Its important survey of municipal health departments has already been referred to.

The American National Red Cross.—Admirable health work was done by the Red Cross during the war, especially in the army and navy, but also in civilian communities. In many places various local health agencies were not co-operating effectively with each other. The Red Cross rendered invaluable service in bringing them together. In approximately 500 communities, many of them rural, health centers were organized where classes and clubs meet, where publications were available, where exhibits and demonstrations were conducted and where, in some instances, clinics were established. The great contribution of the Red Cross was to develop the idea of local co-operation. The organization was criticized by a few persons because in some communities it set itself up as an independent health agency; this criticism applied particularly to the Red Cross health centers. It is believed by most authorities that a health center should be directly under the control of city or county health officers or connected officially in some other way with the local government. On the other hand, city and county departments of health, in many instances, have not been actively interested in bringing together the various health agencies of the community for participation in effective health work. If leadership had not been assumed by the Red Cross, co-operation might not have been brought about at a time when it was greatly needed.

Out of 2,960 local Red Cross chapters reporting in the fall of 1922, 33 per cent were maintaining classes in home hygiene and care of the sick, 8 per cent were holding nutrition classes, 10 per cent were conducting public health

nursing, and 14 per cent were making specific efforts to co-ordinate the work of local health agencies.

An advisory committee composed of prominent physicians, sanitarians, and laymen was authorized to outline a health program for the American Red Cross and submitted in the spring of 1923 a report recommending the more active development of health work along the following lines:

(1) The organization of classes in home hygiene and the care of the sick.

(2) The organization of classes in nutrition.

(3) The organization of classes in first aid and life saving.

(4) The health phases of the Junior Red Cross program, such as (a) the development of personal health habits; (b) participation in a school health program; and (c) participation in community health programs.

(5) The enrollment of properly qualified nurses under the Division of Nursing Service.

(6) The organized development of public health nursing in rural and semi-rural districts, through the activity of the Division of Public Health Nursing.

(7) Assistance in the development and standardization of the training of public health nurses through loans, scholarships, subsidies, and the like. (This work of the Red Cross could with advantage be materially expanded in co-operation with the National Organization for Public Health Nursing.)

(8) The development of machinery for the co-ordination at one central point of the work of various local health agencies.

(9) Co-operation on a national scale with such organizations as the National Health Council for the purpose of furthering the co-ordination of voluntary public health activities.

In the opinion of the committee, it is especially important for the Red Cross to develop within each chapter a health study group to deal with both the principles of personal hygiene and local community health conditions and health needs. This work is held to be basic. It is also recommended that local chapters conduct demonstrations to establish the value of specific community health services, and that public health nursing and the co-ordination of existing

community health agencies be emphasized. It is essential, states the report, that all work undertaken be carried on with the knowledge and approval of the state department of health and of the local health authorities.²⁷

The American Medical Association.—Through its Council on Health and Public Instruction, the American Medical Association issues pamphlets, charts, and posters on various phases of disease prevention, including uniform educational pamphlets for the use of state departments of health. It publishes material on medico-legal questions, including a series of Supreme Court decisions on the powers and duties of health officers and similar legal problems. Through its Propaganda Department it has done admirable work in exposing the fraudulent nature of nostrums and various kinds of quackery. In 1923, the Association began the publication of *Hygiea*, a popular high-grade health magazine.

*The National Organization for Public Health Nursing.*²⁸—This organization acts as a clearing house for information regarding all phases of public health nursing, seeks to establish standards for technical training, issues a monthly magazine, *The Public Health Nurse*, conducts a "reference and package library service," a vocational bureau for the purpose of guiding "the right nurse to the right service," and assists graduate nurses in making arrangements for postgraduate training.

*The American Association of Hospital Social Workers.*²⁹—This is an organization for "inter-communication among hospital social workers, to maintain and improve standards of social work in hospitals and dispensaries and to stimulate its intensive and extensive development." It holds meetings in connection with the annual meetings of the National Conference of Social Work and the American Hospital Association.

Community Service.—This organization was created for the purpose of assisting local communities in making their

leisure time more productive of health and happiness. It promotes, through local committees, athletic and outdoor sports and "vacant lot" play, and seeks to bring about the maximum use of existing facilities such as playgrounds, gymnasiums, and parks.*³⁰

The National Physical Education Service is maintained by Community Service. Since its establishment in 1919, it has assisted in bringing about the passage of laws for the statewide promotion of physical education and for the employment of state supervisors of physical education. It is supporting the "Fess-Capper Physical Education" bill, introduced into the United States Congress for the purpose of making funds available to the states for the development of physical education throughout the country.†

The Conference of State and Provincial Health Authorities of North America.—This organization holds an annual meeting, at which the various technical problems of sanitation and public health administration are discussed.

The National Health Council.—This is primarily a clearing house composed of the American Public Health Association, the American National Red Cross, the American Social Hygiene Association, the American Society for the Control of Cancer, the Conference of State and Provincial Health Authorities, the Council on Health and Public Instruction of the American Medical Association, the American Child Health Association, the National Organization for Public Health Nursing, the National Tuberculosis Association and, as a "conference member," the United States Public Health Service. It maintains an information service by which its members are informed regarding the activities of all other members; and, through its Common Service Committee, quarters are maintained in New York City, where most of the constituent organizations have offices and

* The importance of recreation to the health of a community is discussed in Chapter XIII.

† See page 268.

common library service. The Council, in 1923, coöperated with the American Medical Association in conducting a popular campaign for the promotion of the periodic medical examination.

*State and Local Organizations.*³¹—It is important to consider in any survey of the nation's health organizations, the various state and local agencies which are privately organized. There are 11 state public health associations, also 38 state tuberculosis associations, in addition to one in Manila. In some states, the tuberculosis associations are engaged in the promotion of general health work, such as child hygiene and public health nursing. A number of the state tuberculosis associations also have all or most of the counties of the state organized; 12 county tuberculosis organizations in Ohio have full-time executive officers. There is a society or committee for cancer control in each of the 48 states and in the District of Columbia, Manila, and the Hawaiian Islands; mental hygiene societies or committees in 23 states; and state organizations for public health nursing, or sections on public health nursing of state graduate nurses' associations in 37 states. Social hygiene societies are to be found in 11 states, the Oregon and Maryland societies being the most active. The Cincinnati Social Hygiene Society should also be mentioned, because of its effective program. Probably a considerable proportion of the cancer and mental hygiene organizations are not especially active most of the year.

Health Councils and Federations.—The establishment and development of state health councils, modeled after the National Health Council, are to be encouraged by the National Council in the future, according to a decision made early in 1923. There was then such a council already in existence in Massachusetts.³² A few local public health federations recently have come upon the field and promise to have important functions in the growth of local health work. At the beginning of 1923, such federations had been established in Cincinnati, Boston, and Cleveland.

Public Health Surveys.³³—A health survey is an “investigation conducted by a trained corps of workers in order to determine the exact status of those conditions which may affect the health of a community directly or indirectly.” Horwood believes that the best results are obtained when an expert is engaged by the mayor or board of health, or some other official agency, or by a civic body, such as the chamber of commerce. He recommends the appointment of a central committee with sub-committees, the thorough organization of the community for the survey, and wide publicity regarding it. When the survey is completed and the expert has prepared his report, the officials of the city should be invited to hear it and there should be definite provision for follow-up work. Cities which have conducted health surveys include Topeka, Kansas; Cleveland, Ohio; several Oklahoma municipalities; Springfield and Rockford, Illinois; New Haven, Connecticut; Charleston, West Virginia; New Orleans, Louisiana; Lewiston and Auburn, Maine; Glen Ridge, New Jersey.

Surveys have been made also of state departments of health by officers of the United States Health Service. These surveys, however, are considerably different; here emphasis is placed upon an examination of the machinery, personnel, and funds available for the work of the organization, rather than on an investigation of the condition of the health of the people and the various resources of the community available for its improvement.

Closely allied to the public health survey is the “demonstration.” Two of these have aroused considerable interest—the Framingham Community Health and Tuberculosis Demonstration and the demonstration of child hygiene work at Mansfield, Ohio. Others are being conducted in Fargo, North Dakota; in Cattaraugus County, New York; in Syracuse, and in a certain section of New York City. Lack of space prevents a description in this outline of these important activities.

A multitude of organizations, official and private, it is observed, are working for the promotion of the nation's health. Occasionally a considerable number of agencies are found to be engaged on the same problem. For instance, at least five organizations have lately been studying ventilation—the U. S. Public Health Service; the Bureau of Mines of the Department of the Interior; the American Society of Heating and Ventilating Engineers; the National Warm Air Heating and Ventilating Association; the Committee on Atmosphere and Man (headed by Professor Ellsworth Huntington, of Yale); and the New York State Commission on Ventilation.³⁴ Some ten or fifteen different kinds of organizations, both public and private, as will be seen in the next chapter,* are participating in school health work. In but few instances, however, is there any friction or duplication of effort.

Within the federal government, the large number of health agencies is especially noticeable, and there appears to be some overlapping of functions. The Public Health Service, the Children's Bureau, and the Bureau of Education are all active in child hygiene work. The Public Health Service, the Bureau of Mines, and the Bureau of Labor Statistics are all making studies in the field of industrial hygiene. In dealing with the Indians of the country, the Public Health Service investigates the effects of trachoma, but the Bureau of Indian Affairs is charged with the treatment of the Indians for all diseases. Recently, a committee of the American Public Health Association wrote to four departments of the United States Government asking whether they had officially defined the pasteurization of milk. Three replied—the Department of Agriculture, the Navy Department and the Public Health Service. "All of the definitions differed," states the report of the committee, "as to the wording of the temperature and time requirements which made them substantially at variance when applied to the

* See page 267.

control of the process.”³⁵ In some instances, overlapping of functions is only apparent. Considering the great number of health agencies in the federal government, there is to a surprising degree a lack of friction; the scientific men of the federal government engaged in health work appear to be motivated by the highest ideals of service.

In bringing about closer co-operation between private agencies, the creation of the National Health Council was obviously an important step in the right direction. Efforts to unite the various bureaus and other agencies conducting health work in the federal government will be discussed in the last chapter.

CHAPTER XII

THE SCHOOL—A SUPER-HEALTH ORGANIZATION

In a large graded school in Vermont, little Mary Jones was unable to do the work of the other children in her grade. She did her best and her teacher tried earnestly to help her, but without success. That was in the spring of 1919. In October, all the children of the school were given a physical examination; among them were sixteen pupils of widely different ages who were unable to keep up with their various classes and had been considered mentally backward and assigned to a separate room for special instruction. The examination showed that little Mary and each of the other fifteen children had one or more marked physical defects, including decayed teeth, defective tonsils, adenoids, faulty eyesight, and poor hearing. With the co-operation of local physicians and various interested persons, nearly all of these defects were corrected during the next few months; and at the time of a second examination a year later, all the children had been returned to their proper grades and were keeping up in their classes. By December, 1921, some of these 16 children were among the leaders of the school.¹ While this may be a somewhat unusual example of the results of school health work, it is only one of many that might be given in support of the claim that the school may be made the super-health organization of the nation.

A community may have a vigilant department of health, quick to detect typhoid fever, smallpox, diphtheria, and other communicable diseases; it may have excellent drainage,

pure water and milk; yet its young people may suffer from a multitude of minor ailments, its older inhabitants may be prematurely incapacitated by the degenerative diseases, young and old may live on a low plane of vitality and be physically and mentally unfit for efficient work and joyful living—all because they have not learned to practice personal hygiene. The prevention of colds and numerous minor disorders, as well as of tuberculosis, kidney disorders, and diseases of the heart and arteries is, in considerable measure, a matter of personal hygiene, and by far the most effective way to develop the practice of hygiene is to begin early and to make it a part of school training.

The Status of School Health Work in 1922.—There were 21,578,316² children enrolled in the public schools for the year 1919-20, and 2,034,642 more in private and parochial schools.³ This, it may be seen, is a very large proportion of the population five to eighteen years of age, which is 27,728,788⁴ (1920 census); and virtually all children, of course, pass through at least a few grades of the public schools. Since various examinations of school children show that a large proportion of them have physical defects, which result in such diseases and deformities later as were disclosed by the inspection in 1917-18 of three million drafted men and by examinations of the Life Extension Institute, it would appear expedient, therefore, to devote adequate time and money to the development of school health work. From the standpoint of education, health activities in the schools are fundamentally important. The Commission on the Reorganization of Secondary Education, consisting of many of the foremost educators of the United States, names health as the first of seven main objectives of education.⁵ The importance of arousing "the public to recognize that the health needs of young people are of vital importance to society" is emphasized. Yet, while the nation is spending over 1000 million dollars per year for education (the amount reported by the states for 1919-20 was

\$1,036,151,209) ⁶ only 12 to 15 million dollars (see Figure 54), ⁷ so far as can be ascertained, are being spent for school health work.* In other words the nation is spending only 65 cents per child per year, approximately, on health work in the schools; and less than 1.5 per cent of the school funds is being spent for such work. As a result of this neglectful policy, at the present time only about one tenth of the nation's children of school age, in the opinion of the U. S. Bureau of Education, are receiving "anything which even pretends to be adequate physical education and health training."

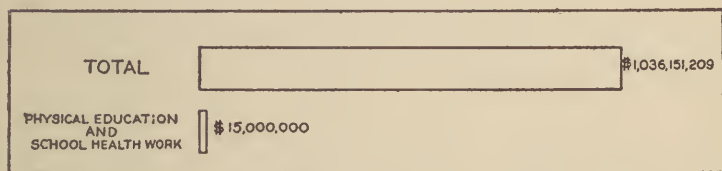


FIG. 54.—EXPENDITURES FOR ELEMENTARY AND SECONDARY SCHOOLS—TOTAL EXPENDITURES AND AMOUNT SPENT FOR PHYSICAL EDUCATION AND SCHOOL HEALTH WORK, 1919-1920.

Thirty-two states had physical education laws in May, 1923, and final action was pending on such laws in three additional states.⁸ Some physical education laws are effective; and some so weak as to have but little influence; only twelve states in 1922 had state supervisors of physical education. But it is encouraging to note that in 21 of the 32 states, the laws were enacted between 1918 and 1923.

In 1922, 39 states had school health supervision or medical inspection laws; some merely permit examinations and others make them mandatory.⁹

* There are very few statistical data available, which are satisfactory, to reveal the present status of school health work; while a multitude of organizations of various kinds are engaged in its promotion, no central agency exists which has had sufficient funds and personnel to collect such data.

Such progress as has been made in school health work is due largely to the influence of the laity. "Public opinion has decided," says a journalist in *Collier's Weekly*,¹⁰ "that, at the expense of the state, every child must have a common school education, so that he may have a fair start in life and be fitted to do his duty as a citizen, as one of the rulers of a democracy. What is the use of an education to an enfeebled body which may mean an enfeebled mind?" Conscious of the defects of school children, teachers, mothers, and other non-medical persons have been largely responsible for the interest shown during recent years in school health work.

Health Work in City Schools.—The schools of the large cities of the United States have the best health service. Virtually all communities with a school enrollment of 10,000 or more employ a physician or nurse or both—usually both; but of communities with an enrollment of less than 1,000, only approximately 50 per cent have such health supervision.¹¹

The Joint Committee on Health Problems in Education of the National Education Association and the American Medical Association collected from 341 school superintendents in communities having a population of 2,500 and over, data regarding health activities for the school year 1921-2.¹² The Committee believes that the information received, coming as it does from all states except Nevada, is typical of conditions among city schools throughout the country. Its report shows that the median annual cost of health supervision and physical education in 282 cities furnishing data was \$1.37 per pupil.* Of the total expenditure for education in 265 cities, the report shows that only 2 per cent (median) was spent for health supervision and physical education.

Considerably more interesting data were made available by the report: for instance, 69 per cent of 318 cities report

* Compare with estimate of 65 cents per child for entire United States, page 247.

a daily inspection of health habits; 61 per cent of 323 cities reporting on the frequency of health and physical examinations have such examinations once a year, 17 per cent twice a year and only 4 per cent have no such examinations. It may appear gratifying that 61 per cent of over 300 large cities have physical examinations at least once a year. It should be noted in this connection, however, that in many instances the examination is relatively superficial (in only 47 per cent of 245 cities reporting, for instance, are the lungs examined), and it is feared that in many instances the personnel is inadequate for examination of all children enrolled. The report on a recent survey of school health supervision in one of the larger cities of the country states:

It is evident that the so-called "physical examination" of the children is of a superficial type and that it cannot be considered either thorough or satisfactory. In fact, it doesn't warrant the name "physical examination," for in many instances it seems to amount to little more than a casual inspection, certainly not thorough enough to discover physical defects except those of the most obvious types.¹³

It is encouraging to note that 36 per cent of 291 cities have gymnasiums in one or more elementary schools; about 4 per cent of the same number have one or more swimming pools.

Those interested in the large number of crippled and otherwise defective children in the country will be gratified to observe the work done for such children by the Department of Physical Training of the Board of Education of New York City.¹⁴ The registration in classes of physically handicapped children in 1922 included:

- 470 Cardiopathic children in 14 schools, annexes and convalescent homes
- 660 Tuberculous children in 15 hospitals, ferryboats, camps and sanitariums
- 3,223 Pre-tuberculous children in 100 schools and annexes

- 3,440 Children in 94 open window classes of 26 schools
- 123 Blind children in 7 schools
- 430 Children in sight conservation classes in 23 schools
- 337 Deaf children in 36 classes in the School for the Deaf and annexes
- 1,981 Crippled children in 29 schools and annexes
- 533 Crippled children in hospital classes in 15 hospitals and convalescent homes
- 172 Helpless crippled children receiving home instruction, by means of 20 home teachers, and 12 after-school home teachers
- 1,105 Physically handicapped children in 20 after-school recreation centers

Among approximately 75 of the 83 cities surveyed in 1920 by the American Public Health Association, 53 had special school classes for mental defectives, 22 had classes for visual defectives, 37 classes for posture, and 45 had nutrition classes.^{14a}

Health Work in Rural Schools.—Somewhat conflicting reports have been made regarding the relative physical condition of rural and city school children. The accompanying graph (Figure 55),¹⁵ prepared by Thomas D. Wood, of the Joint Committee of the National Education Association and the American Medical Association, indicates that there are more defects among country children than among city children. On the other hand, a review¹⁶ by Taliaferro Clark, of the Public Health Service, of investigations of various groups of city and rural school children shows considerably less difference than do Wood's figures. In fact, the studies reviewed by Clark indicate that there are relatively fewer refractive errors among country children than among city children; and two groups of rural school children showed relatively fewer defective teeth than three groups of children living in cities. There is evident need in this field for further scientific studies.

Whatever may be the condition of the children themselves, there is little doubt regarding the inadequacy of facilities

for health work in rural communities. "The country school-house," states the Joint Committee on Health Problems,¹⁷

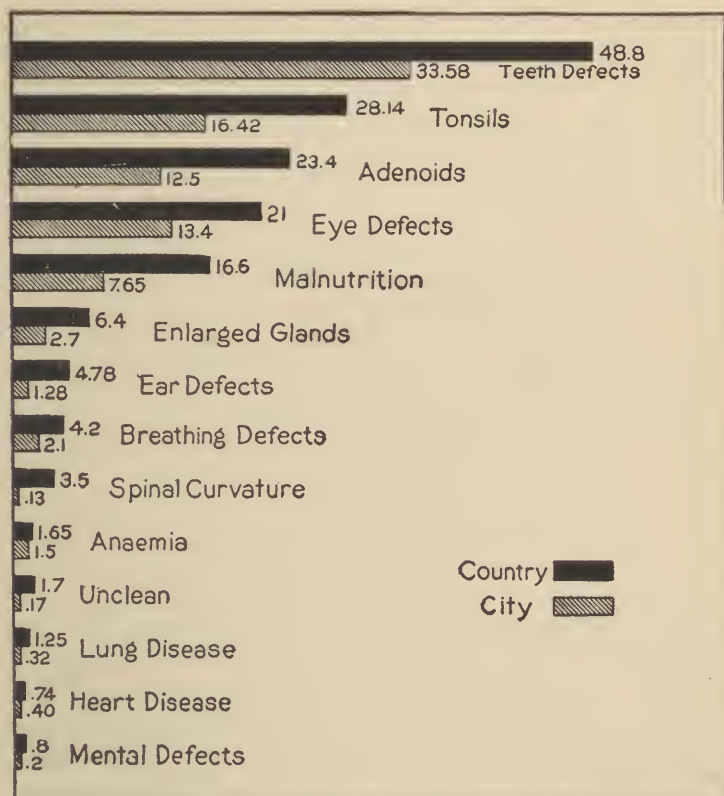


FIG. 55.—HEALTH DEFECTS OF CITY CHILDREN AND COUNTRY CHILDREN COMPARED. FIGURES SHOW PERCENTAGES FROM ALL STATISTICS AVAILABLE IN 1918, WHICH INCLUDE REPORTS OF THE EXAMINATION OF OVER A HALF MILLION CHILDREN.

Prepared by Dr. Thomas D. Wood.

"is usually the most insanitary and inadequate type of building in the whole country, including not only buildings for human beings, but also those used for domestic animals."

Many almost spectacular instances of excellent work are found, but, in general, progress is slow—much slower in rural communities than in cities. There is at present little rural school health work planned on a statewide basis. Only about 30 per cent of the 2,850 counties of the United States, wholly or in part rural, have any form of school health supervision,¹⁸ and yet approximately 60 per cent of the school children of the United States attend rural schools. (See Figure 56.)¹⁹

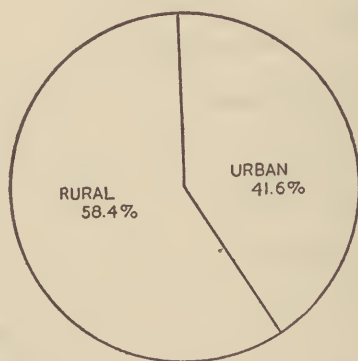


FIG. 56.—PERCENTAGE OF ALL SCHOOL CHILDREN IN THE UNITED STATES (ABOUT 1920) ATTENDING URBAN AND RURAL SCHOOLS.

The report on health work in rural schools issued in 1922 by the Joint Committee²⁰ shows that in only eleven states is there health legislation applying to rural schools which makes medical inspection mandatory. These states are Alabama, Florida, Georgia, Idaho, Massachusetts, Montana, New Jersey, New York, North Carolina, Pennsylvania, and Wisconsin; in addition, Kansas requires dental examinations. Medical inspection is *permitted* in other states, and health examinations by *teachers* are mandatory in eight states, also in one additional state if they are not conducted by physicians.

At least 2,000 nurses, the Committee estimates, are employed as full-time rural school nurses, or as nurses who devote a large part of their time to school work. These are obviously inadequate for 2,850 rural counties. The plans of one state, however, indicate what may be hoped for when this field is systematically covered. Recently it was estimated in Massachusetts that the time was not far distant when 95 per cent of all school children in the state would have the advantages of school nursing service.

There is a serious lack of clinic facilities in rural districts. This problem has been met in a few instances by traveling clinics. In North Carolina it had been found that 80 per cent of the children in rural schools had decayed teeth and that under the old plan of notifying parents, less than 1 per cent had corrections made. Therefore, dentists with portable outfits were sent into rural districts; and up to January, 1922, they had treated more than 66,000 children in two thirds of the counties of the state. In Kentucky a tonsil and adenoid clinic was held in a mountain valley of one of the state's most primitive counties. During its three-day stay, about 100 children were examined. They came from a radius of 15 to 20 miles over the mountains; 20 were operated on for defective tonsils and adenoids and 10 for eye defects.²⁰

A Standard Program.²¹—School health work includes (1) training in health habits and health instruction based on ideals, (2) physical training, (3) examinations and the correction of defects, and (4) the hygiene of instruction and the sanitation of the school plant. The modern school places the emphasis where it belongs—on positive health. "Normal, robust children, free from defects and disease so far as humanly possible, with wholesome ideals built upon a sound and lasting groundwork of healthful habits developed in their early years, should be the goal of all school health work," says the National Child Health Council.*

* Superseded in 1922 by The American Child Health Association.

"The thing to be desired is not only the maximum of health during school life, but its fruition in young men and women who shall have sound bodies, sound minds, and such a happy outlook upon life as shall enable them to contribute most to the future of the nation."

Training in Health Habits and Health Instruction.—In the first six grades, emphasis is placed on the development of health habits; later this work is supplemented by definite hygiene instruction; and an effort to impart ideals is maintained throughout.

A program of health habits proposed by the Advisory Committee on Health Education of the National Child Health Council ²² includes:

1. Eating three warm, wholesome meals regularly each day, with no candy or sweets between meals. Sitting down to eat, chewing food thoroughly, eating slowly.

2. *Every day* eating some fruit, and two or three vegetables, including one green or leafy vegetable. *At every meal* eating some whole grain bread or cereals.

3. Drinking *at least* 1 pint of milk each day, but no tea or coffee.

4. Drinking at least three and preferably four glasses of water every day.

5. Sleeping the number of hours indicated below, well covered, with the bedroom windows opened wide:

Children 4 and 5 should sleep at least 12 hours each night.

Children 6 and 7 should sleep 11½ hours each night.

Children 8 and 9 should sleep 11 hours each night.

Children 10 and 11 should sleep 10½ hours each night.

Children 12 and 13 should sleep 10 hours each night.

6. All children should have *at least* two hours of play in the fresh air daily. Children in the elementary grades need much more. When the weather does not permit going out of doors, they should play indoors with the windows open.

7. A natural bowel movement every day (in the morning preferably).

8. Brushing the teeth *at least* once a day (twice preferably), especially before going to bed.

9. A full tub or sponge bath at least once a week. (Warm water should be used wherever possible and plenty of soap should always be used.)

10. Washing the hands before eating and after going to the toilet.

11. Always carrying a handkerchief and being careful to protect other people by holding it over the mouth and the nose and bowing the head when coughing or sneezing.

In addition, attention must sometimes be given to the care of the eyes, ears, nose, feet and hair and to such bad habits as careless spitting, biting finger nails, and using one another's drinking cups.

After the sixth grade is passed, the imparting of knowledge regarding diseases and their prevention may be given more emphasis. Courses in physiology and hygiene are used, and biology furnishes not only an important vehicle of instruction, but a desirable point of view. In connection with civics and other social studies, community hygiene may be taught to both boys and girls, and mothercraft, domestic science, and similar subjects furnish an excellent opportunity for instruction in personal hygiene and the hygiene of the home. In both biology and domestic science, girls of high school age may be taught the essentials of sex hygiene, including the facts of menstruation and the danger of permitting conduct which sometimes leads to gonococcus infection and syphilis. Boys may be given similar instruction in connection with biology, physiology, hygiene and physical education. These various subjects also afford excellent opportunity to teach the elements of nutrition, a subject of increasing importance in health work.

The school is also the best place for mental hygiene, a field, as has been observed, to which an increasing amount of attention is being given in health work. Mental hygiene, according to the educators' point of view, concerns itself with the "prevention of mental disorders and the encouragement of a well-balanced and serene mind, capable of adjusting itself to the mastery of life's problems, with a maximum of skill and freedom from mental strain." Evidence is accumulating to show that many nervous and mental dis-

orders may be avoided through proper mental hygiene in childhood. The school may become a potent influence in the promotion of mental health, by teaching children to respect themselves and to develop a feeling of personal worth, by giving them an opportunity for self-expression, by helping them to concentrate the attention, by training them to act promptly in meeting such emergencies as a cut finger, and especially by encouraging normal social relationships and preventing the withdrawal of the individual from his associates.

Health Ideals.—If proper health habits are to endure and if knowledge of hygiene is to be useful, ideals are essential. They alone will furnish the motivation which will lead the child to healthful conduct in later life.

Among little children, weighing keeps the interest active, and is also helpful in gaining the co-operation of the home. Erroneous standards and points of view referred to in an earlier chapter, of course, must be avoided. Weighing, if properly conducted, leads to talks by the teacher on the importance of health habits and intensifies interest in games and sports. School lunch may also be used as a means of instruction, and health clubs are found by some teachers to be most helpful. They all may be made effective motivating agents.

In later years, strength, beauty, joyful living, and efficiency in service may become more clearly formulated as rational ideals. Children may readily learn to understand that proper health habits make them stronger, better looking, able to play more joyfully, to work more efficiently, and to share more largely in the common life.

Physical Training.—It has long been recognized that physical training is invaluable in the development of a sound body, physical and moral courage, alertness, self-reliance, honor, and the ability to co-operate with others. Now it is being realized that it is also helpful in developing right mental attitudes, self-control, normal interests, co-ordinated

activity, and in the prevention of nervous and mental disturbances. "The modern study of psychology and mental hygiene," states William H. Burnham, "has put a tremendous emphasis on the significance of the various forms of motor activity, and especially what we call physical exercise. Its educational, mental, and moral significance is greater than any, except perhaps a few of its most enthusiastic devotees, have imagined. Physical education . . . should in large degree furnish . . . the psychophysical attitudes that lie at the foundation of efficiency, mental health, and morality, and permanent interests that will carry over into life. It should develop that supreme condition of physical and mental health that we only suggest by the use of the word 'morale' in its highest and broadest meaning."

Games and folk dancing and simple athletics are used among the younger children. The direction of play is important. It has been observed sometimes that, when undirected play is provided, the majority of the children do not play at all but loaf instead, and that, when they do play, they select games such as jacks, marbles, or craps instead of those which have definite health value.

For older boys and girls, especially the former, athletics are now largely used in modern schools instead of the old-fashioned gymnasium work. Some types of gymnastics involve considerable mental strain, and do not furnish the enthusiasm and the nervous and mental relief resulting from games. As a place for indoor athletics, however, the gymnasium is very useful. Athletics have long been used as a means of moral prophylaxis for boys; now they are regarded as similarly useful among girls.

Health Examinations and Corrective Work.—In a school in Virginia was a boy whom the children called "Crazy Bill." He was larger and older than the children of his grade; in fact, he had never progressed beyond the first grade. Assuming that he was feeble-minded, the teacher did nothing to remedy the situation. A school nurse, however,

found that "Crazy Bill's" vision was so defective that he could not read what was written on the blackboard and that he was totally deaf in one ear. The vision was corrected, the teacher adjusted the boy's work to his deafness, and since that time he has been making his grades regularly.²³

When the child enters school, it should have a thorough examination stripped. The mother should be present, in order that she may be advised regarding the child's condition. Such an examination should be made at least once every two or three years, the National Child Health Council believes, and a somewhat less detailed examination more frequently. The report of the Advisory Committee of the Council has given careful attention to the question of examinations. It states:

In actual practice the frequency of examinations will depend upon the financial resources of the school. Examinations should certainly be made by well-trained school physicians at least once every two or three years. Besides this there should be an annual routine examination which need not necessarily be made by a physician.

Because of past insistence that only trained physicians should make annual routine physical examinations, when services of such physicians were not available to an adequate extent, a great deal of school work either has not been done or else has been slipshod and unsatisfactory. The modern tendency is to relieve the physician of work which properly can be delegated to others, so that his services may be utilized to the best advantage. One way of doing this is not to attempt the complete physical examination of all school children by the expert medical diagnostician every year, using, where possible, the services of some qualified person specifically trained to recognize the signs of health and the signs of departure or variation from health for annual or semi-annual *routine* health examinations. Such person should not attempt to make technical diagnoses, but should refer pupils showing indications of departure from health to the physician for specific diagnosis and advice (or to the dentist for teeth defects).

Because the ratio of physical defects encountered in school examinations diminishes with the length of time in

school (with the exception of visual defects), Taliaferro Clark believes that it is unnecessary and uneconomic to make routine physical examination of every school child each school year.²⁴ The child should be carefully examined on entrance to find out what is the matter with him, he recommends, re-examined the next year, to see what improvement and corrections have been made, and then examined a third time on completion of the eighth grade. This plan presupposes health supervision which will detect disorders and disabilities that may arise during intervals between examinations, such developments necessitating the re-examination of individual children.

Probably in most instances, physical examinations are made by physicians employed particularly for that purpose, with or without the aid of a nurse; in some schools they are made by a school nurse alone. In New York City, an attempt was made to secure the co-operation of private practitioners in the examination of school children.²⁵ The Board reports, however, that "the percentage of examinations by private physicians" was not "sufficiently large to indicate any great interest on their part or on that of the parents in this method of procedure." There was also considerable discrepancy between the proportion of defects found by family physicians and of those discovered by school medical inspectors.

In general, medical inspection laws have the support of the people, who realize that they are conducive to the welfare of the children. There is occasionally some objection. A bill exempting children from medical examinations upon the written request of parents or guardian was adopted by the Washington Legislature in 1921. In November, 1922, however, after 70,000 signatures had been obtained to a petition to refer the question to the people, it was rescinded at the polls.²⁶

The school nurse is essential to efficient health work. Figure 57 on the following page suggests how very effective

her work may be.^{27*} By visiting at the home and explaining the health needs of the children as revealed by the examinations, by making arrangements with physicians, hospitals, clinics, and other agencies for various kinds of medical and surgical care, by carrying out in the school the instructions of the physician making examinations, by attending

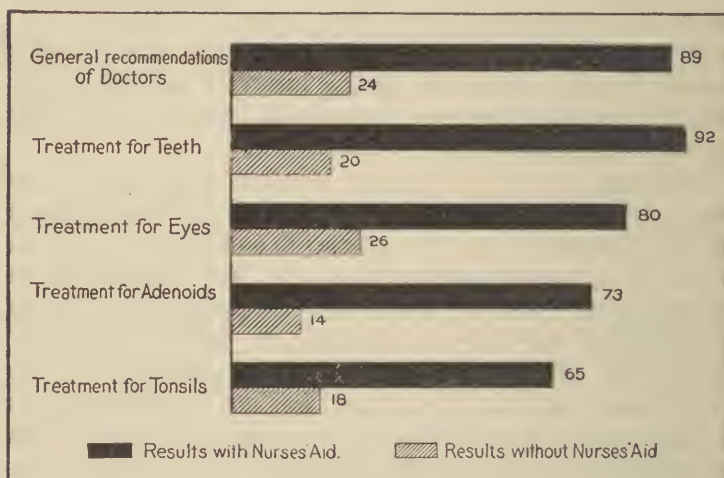


FIG. 57.—PERCENTAGES OF PHYSICIANS' RECOMMENDATIONS CARRIED OUT BY PARENTS OF SCHOOL CHILDREN, WITH AND WITHOUT THE AID OF NURSES FOR FOLLOW-UP WORK.

Percentages based on two groups of Philadelphia school children (3,133 in all) found with physical defects.

Prepared in 1918 by Dr. Thomas D. Wood.

to such minor ailments as in the judgment of the physician she is capable of handling, and in assisting teachers in health instruction and the developing of health habits, the school nurse is invaluable.

In every school there should be proper provision for health examinations and the treatment of minor ailments; most city schools require one or more rooms for this purpose.

* See also page 289.

Some facility for dental examinations should be available to all schools. A health record preserved throughout the child's school career is almost essential to systematic work.

It will be found that many children have round shoulders, crooked backs, and fallen arches. Other children will need the attention of eye, ear, and nose specialists; still others will require medical and surgical care. Through co-operative arrangements with the proper institutions, the school is enabled to provide corrective work for all of its children.

The Hygiene of Instruction and School Sanitation.—In the modern school, where there are any considerable number of defective children, there are special classes for cripples, the feeble-minded, the epileptic, the deaf, and the blind. Some sanitarians advocate, as has been observed, special classes for children with cardiac diseases. Furthermore, an increasing number of open-air classes are being established, especially for children predisposed to tuberculosis. In schools from which the pupils cannot go home at noon, lunch rooms are desirable.

School architecture is coming to have an important place in educational administration. The building should be erected on ground that is well drained and located in a quiet neighborhood, and there should be plenty of room for playgrounds. Two stories is the maximum height recommended. Special attention should be given to heating, lighting, and ventilation, also to the floors, to the composition and tinting of the walls, and to the height of the classrooms; floor space per pupil must also be considered. Most important of all, gymnasiums and playgrounds are needed, together with showers and dressing rooms. An increasing number of high and elementary schools are being equipped also with swimming pools.

Leadership and Supervision.—The National Child Health Council recommends a staff of nine to eleven persons for school health work in a city of 25,000 to 30,000 inhabitants having a school population of 5,000 to 6,000. The program

which such a staff makes possible is not ideal, but it is relatively easy to provide. The personnel recommended is as follows:

	<i>Minimum</i>	<i>Maximum</i>
1 director of school health work.....	\$ 4,000	\$ 5,000
1 or 2 part-time physicians @ \$1,200-\$1,500	1,200	3,000
1 supervisor of health education and physical education	2,500	3,500
1 mental hygienist and supervisor of ungraded classes	2,500	3,500
3 school nurses @ \$1,500-\$1,800.....	4,500	5,400
1 part-time dentist	500	1,500
1 or 2 oral hygienists or dental nurses @ \$1,500-\$1,800	1,500	3,600
	<hr/> \$16,700	<hr/> \$25,500
Cost per pupil on basis of 5,000 pupils..	\$3.34	\$5.00
Cost per pupil on basis of 6,000 pupils..	2.78	4.20

This staff does not include teachers of various elementary subjects having a relationship to health instruction nor nutrition specialists nor teachers for defective children.

Full co-operation between the board of health and the board of education is essential to effective health work in the school. Various arrangements have been made regarding responsibility. It is clear that the board of education is accountable for the educational phases of the work and that the board of health is responsible for the detection of communicable diseases. Usually if the superintendent of schools and the city health officer are co-operative, a mutually satisfactory plan can be developed. The director of school health work should be primarily a man or woman with administrative ability who has had training and experience in hygiene, educational psychology, health education, and physical training. If he is a physician in addition, so much the better. Of 326 cities reporting on the supervision of health in schools to the Joint Committee of the National Education Association and the American Medical Associa-



Courtesy of American Red Cross

NUTRITION SERVICE IN THE TREATMENT OF INCIPIENT TUBERCULOSIS CASES, PREVENTORIUM
SCHOOL, SCHENECTADY, NEW YORK

tion, in 73 per cent the work was conducted by the board of education, in 12 per cent by the board of health, and in 13 per cent by the two boards acting jointly.²⁸

Health Work in High Schools.—Most of the foregoing data on school health refer to work in elementary schools. Only a small proportion of children attend high school—2,199,389²⁹ of the more than 21 millions in all public schools; yet this is a large number, and they are young people at an important period of life. It is regrettable, therefore, that no report appears to be available revealing the status of health service in public secondary schools.

The tendency in recent years has been to emphasize the training of winning football, baseball and basketball teams to the neglect of athletics for students who are not members of such teams. Instruction in hygiene has not been developed satisfactorily; too often the subject is taught by a coach or gymnasium instructor. Few coaches have been trained for hygiene teaching. In a number of cities, however, excellent teaching is done in connection with biology, domestic science, and other courses. In civics and sociology, sometimes, instruction is given in community health problems.

In the construction of gymnasiums and swimming pools in new high school buildings, considerable progress has been made, and this tendency presumably results in the wider use of the physical examination. Probably less efficient follow-up work is done in high schools when defects are discovered than in elementary schools; and, generally speaking, the construction of gymnasiums has proceeded more rapidly than has the production by colleges and normal schools of competent directors of physical education to man them.

In some communities, health work in the high school is making especially good progress. In New York City, emphasis has been placed on group activities, and a large number of students participate in interclass athletics and game competitions. Careful inspection of hair, teeth, and vision with follow-up work is conducted in all of the high

schools and the detection and correction of dental defects is stressed. In some schools, special classes for the correction of faulty posture are conducted. At one of the girls' high schools a selection is made from the senior class of the girl most free from physical defects; she is known as "the health girl," and receives a prize at Commencement.³⁰ Psychiatric examinations were conducted at the Washington Irving High School during the fall of 1921—44 girls who were troublesome discipline cases showed a low mentality and were referred to a psychiatrist for examination. In 23 cases, satisfactory school adjustments were made; six girls were withdrawn from school; and in 15 instances program modifications or other adjustments were made—too recently, at the time of the report, to justify a statement of results.³¹

Hygiene and Public Health in Colleges and Universities.³²—A comprehensive program of hygiene and public health in a university should include, according to John Sundwall, of the University of Michigan, (1) a university health service, (2) a full program of physical education for men and a similar program for women, (3) intramural athletics, and (4) the training of men and women for positions of leadership in the field of hygiene and public health.

The aims of an adequate health service in a college or university, according to Doctor Sundwall, include the detection of all defects and disorders which may interfere with the efficiency of the student and their systematic correction; the protection of the student from communicable diseases; the isolation and treatment of persons infected with such diseases; advice and treatment when necessary for all students who may become ill; the building up of a healthful environment; and instruction in the elements of personal and public hygiene.

Three divisions of a college or university health service in general charge of a single director are suggested: first,

a service division; second, a division of sanitation; and third, a division of education.

The first division includes among its activities the physical examination of all students; the administration of vaccinations and inoculations against smallpox, typhoid fever, diphtheria and pneumonia; also the treatment of sick students in dispensaries and hospitals. In some instances a fee is charged at the beginning of the year which provides for all such service. Doctor Sundwall believes that, when hospital treatment is necessary, it is best to charge an additional fee.

The division of sanitation is accountable for conditions not only in college buildings, but in all quarters where students live.

Through the division of education, the director of health service is also responsible for the education of the student in personal and community hygiene. According to recommendations issued by the U. S. Public Health Service in 1923, such a course should be required in all colleges and universities.

At the University of Michigan, Cornell University, the University of California, the University of Kentucky and other institutions special attention is given to the promotion of health. A Department of Hygiene and Preventive Medicine was recently established at Cornell University with a personnel consisting of one professor, one assistant professor, a chief medical advisor, seven assistant medical advisors (five for men and two for women), and three clerks. The activities of the Department include: (1) medical examinations, (2) medical consultations, (3) instruction in hygiene and preventive medicine, (4) medical conferences, and (5) sanitary supervision and control of communicable diseases. Each student is required to have a medical examination each year. The medical examiners' offices are open daily from nine to six, and students are encouraged to come and report even the slightest disorders and to discuss any matter

of concern regarding their health. During the second semester, each student must report for a conference regarding the state of his health and manner of living. Some kind of physical exercise is required of all students during their first two years; an infirmary is maintained; and a one hour a week lecture course in hygiene and preventive medicine is required throughout the first two years.³³

Gymnasiums, swimming pools, and facilities for other athletics are probably more available to college students than to any other group in the population. Among 260 universities and colleges reporting to the American Physical Education Association,³⁴ 152 have one gymnasium each, 44 two gymnasiums each, and 8 have three or more; 79 institutions have one swimming pool, and 9 have two each. Tennis courts are well supplied in universities; 22 colleges have one tennis court each; 35 have 2 each; several have 20 or more, one of these having 70 courts and another 75. Athletic fields also appear to be generously provided.

Satisfactory courses in physical education have not been developed in most universities and colleges, and in only 178 of 210 institutions reporting are such courses prescribed. A large number of institutions—200—have a department of physical education; 118 or more provide care of the student's health and 55 or more assume responsibility for the sanitation of the college community. The head of the department of physical education has a seat in the college faculty in 189 of 216 institutions reporting.

In universities and colleges the tendency is strong to center the attention on the training of winning teams of a few men each, to the neglect of the other students. This is largely because college sports are controlled in many instances by athletic associations and graduate managers. One result has been the expenditure of vast sums of money for stadiums that are used for only a few spectacular games each year.

Simultaneously with the increasing popularity of inter-

collegiate football and the building of stadiums, a more wholesome development is taking place—the participation of students to an increasing degree in intramural athletics and other physical recreation. This tendency is to be observed in many universities and colleges throughout the country. While in one college recently the president and the professor of mathematics resigned because a losing football team had thrown trustees, faculty, and alumni into a row, in Amherst College 478 of its 520 students were in training as athletes. Reed College of Portland, Oregon, has been similarly successful.

Present Needs and Prospects.—A multitude of persons appear eager for the development of school health work, and many agencies are now participating in it. They include public health associations, national and state tuberculosis associations, extension service of the Agricultural Department, the American Red Cross, the Junior Red Cross, Parent-Teacher Associations, mothers' clubs, women's clubs, Y. M. C. A., Y. W. C. A., farm bureaus, grange, home and school leagues, rural school improvement associations, civic leagues, commercial clubs, Home Care Health Leagues, churches, U. S. Bureau of Education, the U. S. Children's Bureau, and the U. S. Public Health Service.³⁵ Yet progress is slow—apparently because of a great lack of trained teachers. While there are available in the United States less than 6,000 trained instructors of physical education for supervisory work, at least 40,000 to 45,000 are necessary even though only one supervisor is provided for each group of 500 pupils.³⁶

For the purpose of establishing or enlarging departments of hygiene in normal schools, colleges and universities, engaged, at least to some extent, in training teachers of physical education, there has been disbursed by the federal government, through the Interdepartmental Social Hygiene Board in the past three years, approximately \$700,000 to 40 normal schools, colleges, and universities in 29 states.³⁷

A comprehensive program for the training of supervisors for school health work is provided by a physical education bill which was being considered by Congress during 1921, 1922, and the early part of 1923, and which was then known as the Fess-Capper bill. This measure,³⁸ if passed, would authorize the appropriation of \$10,000,000 for the first year; and, for each subsequent year, "an amount sufficient to allot \$1 per child of school age to each state which shall accept the provisions of this act"—these amounts to be distributed among the states for "the preparation of supervisors and teachers of physical education, including medical examiners and school nurses," with the understanding that the allotment is not available until the state shall provide a sum of money equal to the allotment, and that no state shall in any year "use less than one fifth of its total allotment for the preparation of supervisors and teachers." Before any state is permitted to use its subsidy, it also must have established a satisfactory system for the preparation of supervisors and teachers of physical education. But it is specifically provided that nothing in the act shall be construed as requiring "uniformity of plans, means or methods in the several states."

The widespread prevalence of physical defects and disorders among school children, the serious consequences in later life of failure to remedy such defects and disorders, the lack of trained leadership and the pitiable inadequacy of funds now available for school health work have brought about a situation which, it is believed, the various states acting independently will not promptly remedy. The physical education bill is supported by the best educators and many public-spirited citizens, who believe it will be a most effective instrument in raising the standards of health and physical efficiency among the people of the United States.

CHAPTER XIII

ORGANIZED RECREATION

"MAN under our industrial system—an artist given no opportunity for expression, an inventor employed as an automaton, a thinker tied to a fool-proof machine—is the victim of disappointed instinct," says Joseph Lee, "subject, accordingly, to all kinds of nervous and emotional disturbance. It is not personal indulgence, but spiritual ideals he is called upon to sacrifice; not his physical comfort, but his life. The radical remedy for this condition, if it is ever found, will be in making industry once more expressive of man's constituting instincts, of the lines of life to which he is by nature irretrievably committed. Blessed be those prophets of the future who shall some day awaken us to the truth that it is chiefly in our work that we must live." ¹

In the meantime, unfortunately, most men must do their real living during the time at their disposal outside of working hours. Community dramatics, community sings, community athletics, and other forms of play and recreation will give the individual the opportunity for expressing the fundamental impulses which industry, in most instances, now denies him. It is beginning to be understood that recreation is necessary both on physiological and psychological grounds. It is essential to health.

In earlier times the day was divided into two parts—twelve hours, more or less, of labor, mostly outdoors with healthful surroundings, and twelve hours of relaxation and rest. Now, for the large majority, the working day has been reduced to eight hours, leaving eight hours for sleep

and eight hours for leisure. But, though the time has been provided, society, as it is now organized, does not furnish the kind of recreation for man's free hours which is most conducive to health. With the increase of leisure, recreation has come, but it has come in a highly commercialized form. The fifth largest industry in the country, from the standpoint of money invested, is the motion picture business. Theaters, pool rooms, dance halls, race tracks, baseball parks, pleasure parks are conducted chiefly for gain. More money is invested by business men to supply amusement for the people during their hours of freedom than in any other way. The biggest salaries are paid not always to captains of industry nor to public officials; a president of a railroad may receive \$100,000 a year, but a motion picture actor, \$1,000,000² and a prize fighter, perhaps a quarter million for a single performance. From a health standpoint, the best recreation is not usually provided by commercial enterprises, largely because those who are in the business are ignorant regarding human nature or careless in providing for its fundamental needs. While many activities promoted for profit may be health-producing for a few persons, most of those who patronize them do so as spectators, not as participants. Though the twenty thousand rooters in the grand stand at a baseball game obtain vicariously a certain amount of exercise, they would get far greater benefit were they organized into "twilight league" or "sand lot" teams, scattered through the city.²

This situation makes it necessary for society to provide through various available organizations the kind of recreation that will be more productive of health. The Y.M.C.A., the Y.W.C.A., Boy Scouts, Girl Scouts, organized recreation in industry, and the playground and recreation movement are furnishing healthful activities of this kind to an increasingly large proportion of the population.

In the forms of recreation now encouraged, the emphasis is not on muscle building exercises as formerly, but on play

and self-expression. There is little need in modern life for large muscles; health is by no means synonymous with muscular development. Play, however, develops physical efficiency, a good carriage, a full chest, a bright eye, good complexion, a stable nervous system, good digestion, strong heart and lungs. It contributes to physical fitness and the joy of living.

Play and the Health of Children.—Organized play has a threefold relationship to the prevention of disease among children. It keeps them in the open air; it develops their bodies, especially the lungs; and apparently it tends to bring resistance to disease, particularly to tuberculosis, pneumonia, and the diseases of the respiratory tract. If tuberculosis continues to cause so large a proportion of deaths as at present, 1,800,000 of the 21,600,000 school children in the United States will eventually die of this disease.³ Recognizing the value of outdoor play, nearly every international congress on tuberculosis has passed some resolution favoring playgrounds as an effective preventive measure.⁴ As an indication that play tends to reduce other diseases, it may be observed that, following the introduction of organized play in the schools of Prosheim, Germany, the number of days of absence from school on account of sickness was reduced nearly one half.⁵

Play also contributes to the physical development of the child. The Public School Athletic League devised three tests for boys under thirteen as an index of physical development. They included (1) ability to jump at least 5 feet, 9 inches standing; (2) to chin a bar four times; and (3) to run a 60-yard dash in 8 seconds. Before organized play was inaugurated in Washington, D. C., these tests were tried on all the playgrounds, and not a boy was found who could pass all three tests successfully. After four summers of organized play, the test was tried again, and 500 boys were found who performed all three feats, and 2,000, in addition, who executed one or two of them. The proportion of young men passing a creditable physical examination for entrance

to the German Army varied in the different cities from 28 per cent for Berlin youths to 72 per cent for Mulheim youths—results almost in direct ratio to the play facilities that were available in these cities.⁶ These facts may appear significant when the physical condition of our three million drafted young men is remembered.

Play and the Health of Adults.—Not only is play important to the health of the male worker in industry, as has been suggested, but it appears almost as essential to adults generally. In many ways, among adults as well as children, suitable recreation prevents disabling diseases and minor ailments. When one is depressed or angry or when, for some other reason, one does not enjoy one's food, it is likely not to be digested; experimentally it has been found that the cutting of the taste nerves in the mouth of a dog stops the flow of the saliva and causes indigestion. But during a camping trip, with the tonic effect on the body of the fresh air and exercise, one can eat food with comfort which under other conditions would cause distress. Exercise is conducive to good digestion, because it increases peristalsis; and when the element of play is introduced into exercise, a mental condition is developed which is definitely helpful in bringing about the proper assimilation of food.⁷

There are special reasons why physical exercise and recreation should be provided for women. They are entering more and more into various employments held previously only by men, and while most of this work is not heavy work, it is hard on the nervous system and requires health and vigor. Again, a large number of married women to-day are unable to be companions for their husbands because they have not the strength for tennis, golf, mountain climbing, swimming, or hiking. Especially as prospective mothers do women need physical training. Childbirth is apparently becoming more difficult and more feared; and, other things being equal, a healthy mother will bear more and better nourished babies than a woman in poor health.⁸ Physical

exercise and outdoor recreation will contribute much to the health of the nation's women.

Organizations Promoting Recreation.—The *Young Men's Christian Association* was the first organization in the United States, with the exception of the German Turnverein, systematically to promote physical education. At first the Y.M.C.A., apparently influenced by the activities of the Turnverein, made up its program chiefly of calisthenics and gymnasium apparatus work. Later, however, it came to understand the value of the play element in physical exercise, and now its gymnasiums are used largely for basket ball, volley ball, and various competitive games. Swimming pools, tennis courts, and athletic fields have also been added. This organization, at the end of its fiscal year 1921-2, had 783 gymnasiums with an enrollment of 303,434, and 534 swimming pools. It gave during that year 115,784 physical examinations, and conducted summer camps with a total attendance of 68,556.⁹ The accompanying table shows the growth of the movement during the past 21 years:

	1900	1910	1920	1921
Physical directors and assistants	266	610	799	778
Gymnasiums	491	648	801	783
Swimming pools	125	326	530	534
Athletic fields	115	172	255	204
Enrolled in gym. classes....	70,000	159,859	345,852	303,434
Physical examinations given..	29,650	66,890	102,091	115,784
Persons attending summer camps	5,000	14,571	64,029	68,556

The Young Women's Christian Association conducts a program of activities resembling that of the Y.M.C.A.

The *Knights of Columbus* and the *Young Men's Hebrew Association* have shown a desire to develop similar programs of physical education and recreation. It is possible that well-organized movements may result. The German Turn-

vereins are still active and have adapted their program to modern ideas of physical education. In addition, there are numerous private athletic associations and similar organizations throughout the United States, all of which should be considered in any survey of the nation's resources which contribute to the development of health and vigor.

The Boy Scout Movement has developed a most excellent program of recreative, outdoor activities. It teaches boys from twelve to eighteen to flash signals from mountain tops, to build bridges across streams, to sleep in the open, to camp in the woods, and to hike and swim. Every scout takes the oath: "On my honor I will do my best to do my duty to God and my country, to obey the scout law, and to help other people at all times; to keep myself physically strong, mentally awake, and morally straight." To become a tenderfoot, and later a second-class and first-class scout, the boy must pass certain tests to demonstrate physical fitness, endurance, and similar qualities. In addition, a large number choose certain special fields of training, such as wireless telegraphy, forestry, personal health and public health. During the year 1922, there were 9,624 scouts who qualified for the merit badge in public health, and 9,235 for the personal health badge.¹⁰

Some of our institutions teach the young to participate in physical activities that they cannot continue in adult life. The Boy Scout organization develops an interest in those types of outdoor recreation which may be utilized throughout manhood. When it is considered that the high death rate among persons over forty-five years of age is not decreasing, the importance of popularizing such activities becomes at once evident. A generation of youth habituated to those forms of recreation which involve vigorous outdoor living may result in a citizenry less susceptible to the degenerative diseases which now are taking off many men in their prime.

There were over 400,000 Boy Scouts at the end of 1921,

and in addition about 127,000 adult leaders. Plans are being developed to bring the membership up to 1,000,000. During the summer of 1922, there were 175,000 scouts in camp for a period of more than one week. This does not include thousands of troop camps over shorter periods of time. Scouting now includes winter camps, also week-end camps the year round.¹¹

*The Girl Scout Movement*¹² is growing rapidly, there being at the end of 1922 approximately 120,000 scouts and 10,000 officers. The original Girl Scout program provided for girls ten to eighteen years of age; but later there were added the Junior Scouts who are younger, also Citizen Scouts who are eighteen and over.

The activities of this organization center about three interests—home, citizenship, and health. "The Girl Scout learns 'that a cheerful scout, a clean scout, a helpful scout is a well scout'; writes the educational director of the national organization, "so that health, physical and mental, is the keynote to the scout activities, which are calculated to develop the habit of health, rather than simply to give information about anatomy or physiology." After being a tenderfoot for at least a month, in order to become a second-class scout, a girl must show ability to make fires in stoves and outdoors and she must know the main rules of healthful living and have some simple first aid information. To become a first-class scout, it is necessary that she show proficiency in home nursing, in first aid, and in either child care, personal health, laundering, cooking, needlework, or gardening. She must also be an all-round outdoors person, a capable leader in camping, a good skater or naturalist, or a good swimmer. After a girl becomes a first-class scout, she may work for various proficiency badges, fourteen of which are awarded for meritorious activity in the field of health. Thus, she may become a "health winner," a "health guardian," "swimmer," "athlete," or "cyclist." In 1921, there were 12,055 such badges awarded for health activities.

In the development of community service, Girl Scouts have participated in many types of public health work, including the following: messenger service in clinics; filing and clerical work in vital statistics bureaus; entertaining children awaiting treatment or examinations in hospitals and clinics; serving milk and other food in schools; being responsible for certain districts in annual "clean-up weeks"; taking children to public health clinics. In connection with an extensive experiment to determine the food needs of growing girls, carried on by the Nutrition Laboratory of the Carnegie Institution at Boston, during the winters of 1919 and 1920, Girl Scouts in Massachusetts volunteered for service and rendered valuable aid.

There were approximately 8,500 Girl Scouts in 1917, 62,000 in 1919, 104,000 in 1921 and 117,280 on November 30, 1922. Camping has been developing rapidly. In 1920 there were 50 large Girl Scout camps, and in the summer of 1922 just twice as many. Winter camping, also, is being encouraged.

The Girl Scouts co-operate with other organizations, including the public schools. In one city of Kansas, 90 per cent of all pupils of scout age are either boy or girl scouts. The national organization has also made an arrangement "with the American Red Cross to secure nation-wide instruction for Girl Scouts in home hygiene and care of the sick and personal health and child care."

The "Camp Fire Girls" conduct similar activities. There were approximately 160,000 members in May, 1923. It obviously would be advantageous if the affairs of both organizations were brought under one general direction, as were the activities of two or three movements some years ago in the field of scouting for boys.

There should be considered also, among organizations promoting healthful outdoor living, various charitable agencies and settlements conducting summer camps for adults, boys and girls, little children and babies; chautauquas; moun-

tain climbing clubs; and a multitude of similar organizations. Making, as they do, definite, tangible contributions to the nation's health, they deserve hearty support.

Recreation in Industry.—Organized recreation has developed more extensively in industry than most persons realize. The Department of Labor, in 1916-17, visited about 1,000 industrial plants which it understood were conducting general welfare work, and reported in detail on facilities in 431 establishments.¹³ It found that approximately one half of these definitely provided for outdoor recreation or regular outings—219 firms reporting 152 baseball grounds, 89 tennis courts, and 28 athletic fields. The following table, supplied by the Department of Labor, shows the distribution of outdoor facilities reported by 219 industrial firms:

INDUSTRY	NUMBER OF ESTABLISH- MENTS HAVING—		
	<i>Baseball grounds</i>	<i>Tennis courts</i>	<i>Athletic fields</i>
Automobile	4	1	..
Foundries and machine shops.....	20	16	4
Gas, electric light and power.....	6	6	1
Iron and steel.....	11	8	5
Mining, coal	7	2	..
Mining, other than coal.....	3	4	..
Offices	4	2	..
Railroads, electric	8	1	1
Railroads, steam	2	2	1
Stores	12	8	3
Textiles	25	5	2
Other Industries	50	34	11
Total	152	89	28

One alert, enterprising company organized a league of twenty-five baseball teams. For some time this company

expended a considerable sum of money each year on baseball. It was found, however, that the various superintendents were placing on the payroll good players who were not good workers. So this policy was changed, but the company continues to support baseball and contributes \$50 annually to each team and helps maintain the grounds and stands.

A beautiful park of many acres is provided by one company, which is used by the general public. Tables and benches accommodate 5,000 persons, and there are rest rooms, a children's playground, an athletic field with tennis court, shooting galleries, bowling alleys, restaurants, boating, and a concrete swimming pool large enough for 2,000 persons to use at one time.

Another company has a large athletic field with separate houses for men and women, which are equipped with lockers and showers. There are sixteen tennis courts and four baseball diamonds. A tennis instructor is employed by the company, and participation in the game is encouraged by the reservation of one court for beginners. During hours when the plant is in operation, these courts are open to the public. There are eight baseball teams and an annual field day is held.

Roof gardens are provided for employees by 23 companies. One large department store has three tennis courts and two basketball courts inclosed in wire netting on the roof, as well as two running tracks; and another firm has on the roof of its plant two places screened off for handball, one for men and one for women.

Country clubs are also found, one company having two such organizations, in addition to two clubs in the town where the plant is located. Another establishment maintains a country club easily reached by train or trolley, which has a membership of 1,800—about half the employees. Men members pay 10 cents a week; women members, 5 cents. It is managed entirely by the employees. In addition to the usual clubhouse equipment, there is a large swimming pool,

two baseball diamonds, a football field, a quarter-mile cinder track, and six tennis courts. This company also conducts a summer camp, as do six of the department stores.

Indoor facilities for recreation are provided by 152 industries, as follows: clubhouse or clubrooms, by 137 firms; bowling alleys, by 63; and gymnasiums, by 52.

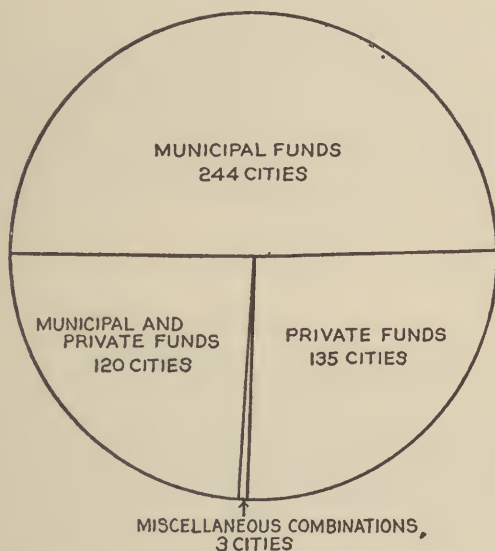


FIG. 58.—SOURCES OF SUPPORT OF ORGANIZED RECREATION IN 502 CITIES.

The Playground and Recreation Association of America was organized in Washington in 1906 with the endorsement of President Roosevelt. It has been instrumental in popularizing play and bringing about the establishment of municipal playgrounds and other facilities for public recreation. Its annual budget is only approximately \$120,000. Yet, largely through its efforts, there has been expended for recreation by municipalities during the last ten years over \$50,-

000,000, including purchase of equipment and the maintenance of playgrounds and recreation centers.

In an effort to discover the status of organized play and recreation for the year 1921, this Association requested data from about 2,400 cities * and towns in the United States and Canada, and received reports from 1,170.¹⁴ Of these, 502 cities report playgrounds and recreation centers maintained under paid leadership. The work in 51 of these was established during 1921.

The sources of support of organized recreation in the 502 cities mentioned are shown by the graph (Figure 58). In municipalities supporting recreation with public funds, the work is under the administration of various commissions and boards, including the following:

	<i>No. of cities</i>
School boards	128
Playground and recreation commissions or departments, divisions, boards and bureaus of recreation.....	88
Park boards, departments or bureaus or park and recreation commissions	56
City councils, boards of trustees, or selectmen.....	11
Departments or boards of public work.....	6
Departments of parks and public property.....	4
Departments of public welfare.....	3
City health department.....	1

Although, among the municipalities supporting organized recreation, the city health department had charge of its administration in only one instance, health departments are becoming increasingly interested in the development of sports and outdoor recreation. In Detroit, as a result of a successful experience in conducting a children's camp in the summer of 1920, the Health Department was granted \$50,000 for the construction of a permanent camp and \$15,000 for

* These include virtually all communities in the United States of over 5,000 population.

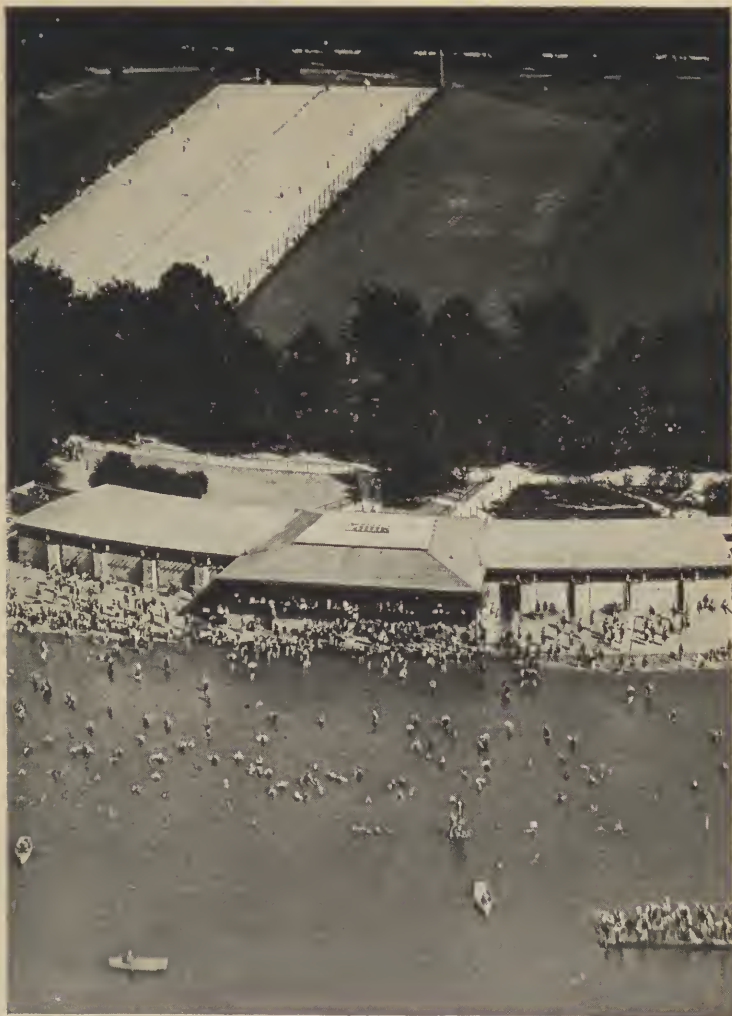


Photo by Signal Corps, U. S. Army

SWIMMING BEACH AT THE NATIONAL CAPITAL

The federal and municipal authorities at Washington maintain for the use of the public, in addition to the bathing beach shown above, 4 swimming pools, 63 playgrounds, 47 tennis courts, 20 baseball diamonds, 12 football fields, 4 golf courses, and other facilities for polo, basketball, cricket, croquet, hockey, soccer, lacrosse, hurling, volley ball, horseback riding, and other sports.

its maintenance during the summer of 1921. Children were selected to attend the camp who showed evidences of malnutrition, or who had been exposed to tuberculosis in the home.¹⁵ The Health Commissioner of Chicago in 1922-23 encouraged winter sports, and his predecessor attributed some part of the good health of that city to the support given to such sports, especially skating.¹⁶

The following *private* organizations were, during 1921, among those in control of playgrounds and recreation centers:

	<i>No. of cities</i>
Playground and recreation associations, leagues, societies..	50
Community service associations, corporations, and bureaus	29
Women's clubs	16
Community centers, boards, and councils.....	13
Playground and recreation committees.....	9
Y. M. C. A. and Y. W. C. A.....	9
Welfare leagues and associations.....	8
Industrial plants	8
Individuals	7
Rotary clubs	4

Almost \$9,000,000 was expended during 1921 by 458 cities for the maintenance alone of playgrounds and recreation centers. Of this amount approximately \$6,000,000 was spent for salaries. In addition, more than \$5,000,000 in bond issues was voted for recreation purposes.

A total average *daily* attendance of 1,154,983 is reported by 407 of the 502 cities. In Chicago during 1922, according to a newspaper report, more than 1,000,000 tickets were issued for golf alone, and the starters said that three or four times that many would have been used had there been room. In addition to playgrounds and recreation centers, with their baseball diamonds, tennis courts, and other types of equipment, there were reported the following bathing facilities:

	<i>Cities reporting</i>	<i>Total places for each activity</i>
Swimming pools	172	456
Public baths	81	383
Bathing beaches	156	246

Special play activities, particularly helpful in the promotion of health, were reported by the 502 cities as follows :

	<i>Number of cities</i>
Boy Scouts	234
Camp Fire Girls.....	139
Girl Scouts	138
First Aid	126
Folk dancing	296
Industrial athletics	139
Skating	146
Summer camps	106
Swimming	230
Tramping	217

Miscellaneous Items of Progress.—It is interesting to observe the increase in the sale of athletic goods as an index of the growing popularity of athletics. A representative of a leading firm reports that there has been an increase in the sale of athletic goods since before the war of about 50 per cent. The purchase of golf clubs and other equipment for the game has more than doubled. In basketball sales, he says, there has been a remarkable development.¹⁷ At 188 establishments there was manufactured during 1919 sporting and athletic goods valued at the factory at over \$23,840,000.¹⁸ The number of summer camps has been increasing for many years until there are now, it is estimated, approximately 5,000.¹⁹

These are activities essential to the health of the community in our present complex civilization. They must be provided in any comprehensive program for the prevention of disease and promotion of positive health. Swimming or tennis taken regularly will do more for constipation than frequent doses of Dr. Quack's Laxative nostrum; baseball will do more for the stomach than Dr. Bunkum's Favorite prescription; a community sing is better for the nerves than any quantity of Nervo; a hike is the best complexion remedy; and when our young men and women will regularly participate in the various outdoor recreations that are now becoming readily accessible, they will be able to use to some better purpose the millions of dollars they are now spending annually in misdirected efforts to cure their minor ailments.

"I hope that here in America," said William James, "more and more the ideal of the well-trained and vigorous body will be maintained neck to neck with that of the well-trained and vigorous mind as the two coequal halves of the higher education for men and women alike. The strength of the British Empire lies in the strength of character of the individual Englishman, taken all alone by himself, and that strength, I am persuaded, is perennially nourished and kept up by nothing so much as by the national worship, in which all classes meet, of athletic outdoor life and sport."²⁰

Statistical data are hardly necessary to show the great value of outdoor exercise in the development of the nation's health. It is a matter of common observation that, generally speaking, the healthiest people are those who participate actively and regularly in outdoor recreation, and this general assumption is supported by scientific opinion. The investment of public funds by municipalities, states, or nation for organized recreation will bring returns in health and vigor worth many times the amount of the investment.

CHAPTER XIV

THE DISPENSARY, THE CLINIC, AND THE HEALTH CENTER

THE great fire of 1665 in London rid the city of bubonic plague, but left in its trail much poverty and sickness. The need for aid became so pressing that the more public-spirited members of the College of Physicians voted to give their services to the poor without charge. Fifty-three of them paid £10 each to Doctor Thomas Burwell, one of their number, with which sum he was to provide medicines for the poor. Thus the first clinic in the English-speaking world was opened in a building of the College of Physicians in London. The first clinic in the United States was established in Philadelphia in 1786. One in New York City and one in Boston were opened soon afterward.¹

The economic condition of many families (as will be set forth later) makes it difficult or impossible for the wage earner to provide adequate medical attention for the various members, particularly the younger children; and when infectious diseases attack the family and other emergencies arise, it faces an acute problem. It appears that in large cities (if the estimates of Michael M. Davis, Jr., for New York City are generally applicable) ² over 15 per cent of the population belong to families whose income makes it necessary that medical care be free if it is to be had at all. An additional third of the population belong to families which can afford to pay for some medical service, but cannot meet the expense of prolonged ill health or of care by specialists. For these great groups of the population of large cities and for similar

groups in smaller cities and towns, there is need for the service furnished by various types of dispensaries, clinics, and health centers.

Types of Dispensaries.—Some dispensaries are operated as out-patient departments of hospitals, others independently. There now appear to be five distinct types of dispensaries and clinics, at least three of which include both groups: (1) the general dispensary or out-patient department of a hospital, (2) the clinic or out-patient department of a hospital dealing only with one or more specific diseases, (3) the public health clinic used in connection with the programs of combating venereal diseases, tuberculosis, and other diseases, (4) the pay clinic or dispensary, and (5) the health center.

A dispensary is defined by Davis and Warner ³ as “an institution which organizes the professional equipment and special skill of physicians for the diagnosis, treatment, and prevention of disease among ambulatory patients.” A clinic, they say, is “a division of a dispensary in which a specified group of related diseases are treated.” No definition of a health center seems to have been generally accepted, although one writer has collected ten.⁹ As the term was used in 1922, however, it appears to refer in most instances to institutions similar to the dispensary, which endeavor to bring together in one building all agencies interested in the prevention of disease and the promotion of health, including those not offering medical service, emphasis being placed, in most cases, upon preventive and educational work, especially among mothers and children.

Growth and Present Status.—The growth of dispensaries in the United States is shown by Figure 59 (page 287). The increase since 1910 has been due chiefly to the remarkable development of recent public health campaigns. In 1922, the dispensaries of the United States, as estimated by the American Medical Association, were reaching

annually a total of almost 8,000,000 different persons* as follows: ¹⁰

By general dispensaries.....	4,250,000
By special dispensaries and clinics.....	3,750,000

The following table ¹¹ shows the number of various kinds of dispensaries and clinics in 1922 and also gives a general idea of the growth of dispensaries since 1916:

	1916	1922
General dispensaries and out-patient departments of hospitals	680	935
Special clinics (not included in above dispensaries and hospitals)	1,360	...
Tuberculosis (888 less 221 included above)....	...	667
Venereal disease (831 less 344 included above) .....	...	487
Mental hygiene (345 less 85 included above)...	...	260
Baby and child hygiene .....	...	566†
Out-patient departments of eye, ear, nose and throat and orthopedic hospitals.....	...	53
Out-patient offices and stations of United States Public Health Service.....	...	139
Miscellaneous .....	...	53
Industrial (enumeration not complete).....	...	134
Others not reporting (estimate).....	260	75
Totals	2,300	3,369

A table showing the number of dispensaries and of certain kinds of clinics in each state ¹³ may be found as a part of Appendix 4.

Motives in the Development of Dispensaries. ¹⁴—When dispensaries were first established, their aim was a simple one—to provide medical assistance to the poor; and the giving out of medicine was the chief service rendered.

* The total of the table is 8,000,000 (more than the total number of different persons), some having patronized two or more institutions during the year.

† This figure is probably too low, inasmuch as Pennsylvania alone had, in 1922, 460 baby centers. ¹²

Later, there developed a demand that medical students be taught diagnosis and treatment by experience with patients themselves, which led to the use of dispensaries in the training of physicians. Of 935 general dispensaries reported to the American Medical Association in 1922,¹⁵ 434 were doing systematic, organized, medical teaching, 38 per cent of which were teaching medical students, 22 per cent post-graduates, 65 per cent internes, and 80 per cent nurses.

About 1905, the development of various militant health organizations gave a great impetus to the growth of dis-

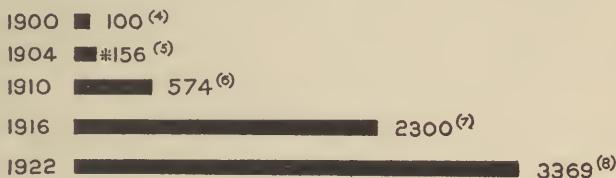


FIG. 59.—GROWTH OF DISPENSARIES AND CLINICS IN THE UNITED STATES.

* This figure includes only general dispensaries. Probably in 1904 there were few special clinics in existence.

Numbers in parentheses refer to notes at end of book.

pensaries, and a new motive developed, that of promoting the public health. The passive, receptive attitude was abandoned by these new clinics; they began "going out after the business." In recent years the economic or efficiency motive has greatly influenced the development of dispensaries. To an increasing extent they are now being organized with the aim of making available to the patient the most efficient service at the least expense to the public. This motive has led to the further development of the general dispensary, including under one roof various special clinics, and to the establishment of the health center.

The Development of Public Health Clinics.¹⁶—There were, in 1905, 20 *tuberculosis clinics*, in 1917 over 500, and in 1922, 888 reported to the American Medical Association in addition to others which failed to report. The tuberculosis clinic was the first “to go out after business.” This it did through the distribution of printed matter and posters, the holding of lectures and exhibits, and, still more important, the employment of the “uncommercial traveler of public health work”—the public health nurse. In Pennsylvania a few years ago a tuberculosis clinic was required by law in every county of the state. In many small places the law was carried out by the employment of a physician to set aside certain hours especially for tuberculosis patients and to treat them without charge. In all instances, the law required the state to provide a public health nurse.

The modern *maternity and infancy dispensary*, including the pregnancy clinic, and clinics for prenatal nursing, obstetrical care, and postpartum care, is an outgrowth of the earlier “milk station” and the infant welfare station which sometimes did little more than weigh the baby and give advice regarding its food. Clinics for the care of children have accomplished wonders in reducing the staggering waste of infant life. As the idea of caring for the expectant mother takes form in the development of pregnancy clinics, greater progress may be expected in reducing the waste of maternal life. *Pre-school Clinics* are established for children too old to attend the baby clinic but not old enough to enjoy the benefits of school health work. There were 566 baby and child hygiene clinics reported in 1922 to the American Medical Association, in addition to others not submitting statements. In Pennsylvania alone there were at the end of 1922, 460 well-baby centers.¹²

School Children's Clinics have been the result of the development of medical school inspection. The discovery of defects by examining physicians has led to treatment, which in many cases could not be provided by the families of school



DENTAL CLINIC, GUILFORD SCHOOL, CINCINNATI
The clinic is set up within the school building.

children. Thus new demands were made upon existing dispensaries, and in some instances special clinics for school children were established, some of them in school buildings. This work has stimulated the development of dental, eye, throat, nose and ear clinics, also orthopedic clinics. The school nurse has been indispensable to the success of this work. In New York City only 6 per cent of the school physicians' recommendations were carried out before the introduction of school nurses. Thereafter it rose to 80 per cent.*¹⁷

Psychiatric and Mental Hygiene Clinics have been established for the following purposes: "(1) For the medical supervision of ambulatory cases of mental disease, particularly in their early stages; (2) for following up patients discharged from psychopathic or insane hospitals; and (3) for thorough examination and diagnosis of cases of suspected mental disease and defect." Mental hygiene clinics are also being organized in connection with courts, especially those dealing with juvenile delinquency. Because of the close relation of minor mental disorders to delinquency and crime, mental examinations are being given, to an increasing extent, as a part of school health work. There were reported in 1922 to the American Medical Association¹⁸ 345 nervous and mental hygiene clinics.

A chart (Figure 60, next page), issued by the Public Health Federation of Cincinnati,¹⁹ and endorsed by the National Committee for Mental Hygiene,²⁰ represents the manner in which the forces of a large city may be organized for mental hygiene work.

The Venereal Disease Clinic was largely a result of conditions brought about by the world war. The program for combating venereal diseases, inaugurated by the state boards of health and the Public Health Service after the passage of the Chamberlain-Kahn bill, placed emphasis upon the treatment of infected persons. With money made available by

* See also pages 260 and 324.

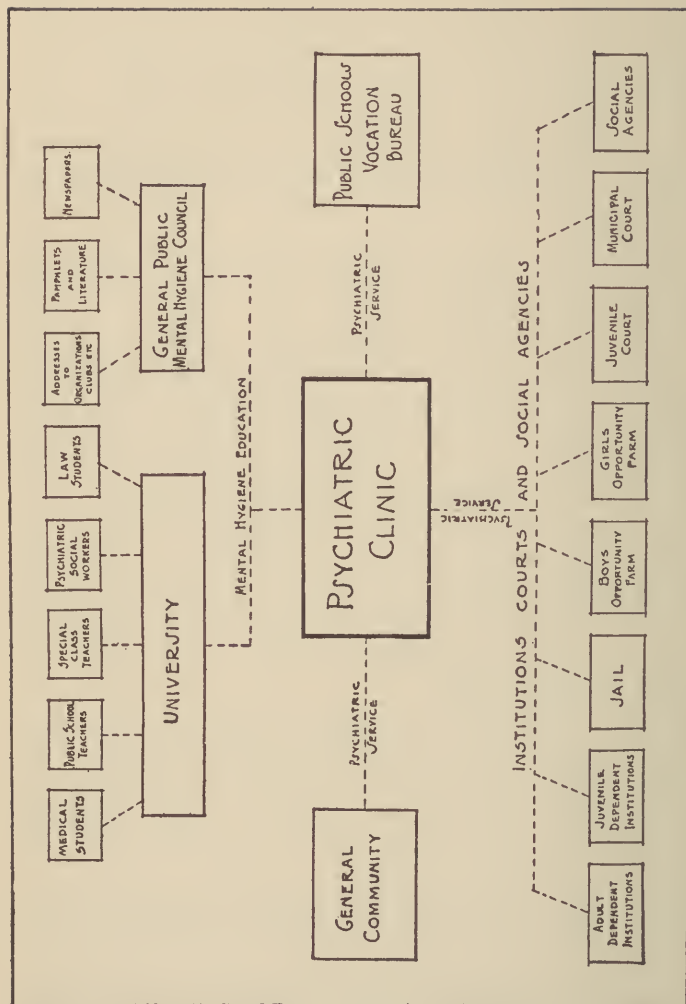


FIG. 60.—PLAN ENDORSED BY THE NATIONAL COMMITTEE FOR MENTAL HYGIENE, FOR THE ORGANIZATION OF MENTAL HYGIENE ACTIVITIES IN A LARGE CITY.

the passage of this bill supplemented by funds from state and local governments and various private institutions, approximately 831 such clinics have been established, many in connection with hospitals.

Cardiac Clinics.—One of the latest developments is the cardiac clinic.²¹ There were at the end of 1922, as noted in an earlier chapter, 38 cardiac clinics in New York City, 8 in Chicago, 6 in Boston and others in some fifteen additional cities of the East and Middle West. The functions of the cardiac clinic are (1) to determine whether heart disease exists in persons worrying over heart defects; (2) to treat existing cases; (3) to advise individuals with a damaged heart regarding the character of labor possible without injury; and (4) to spread information regarding the prevention of heart disease.

Dental Clinics have not been included in the reports of the American Medical Association and of Davis and Warner, but they are becoming increasingly important in public health work. For a decade or more, it has been known that systemic diseases are caused by neglected teeth. One writer believes that many cases of cancer of the face and mouth can be eliminated in the "pre-cancerous stage" with the intelligent aid of the dentist. Important dental clinics may be found in Boston, Philadelphia and Rochester. A dental clinic was being established in Chicago early in 1923 "of proportions hitherto not attempted," and under a plan fostered by the Chicago Dental Society, 200 dental chairs and 100 dental hygienists were to be available for continuous dental supervision of all school children in the city of Chicago.²²

The Industrial Hygiene Clinic will be discussed in connection with health service in industry.

*Pay Clinics.*²³—A person with eye trouble causing headaches and other symptoms may in most communities obtain aid from one of several sources: (1) an oculist in a private office, (2) a clinic where an examination may be had

free or at a nominal cost, (3) an optician or optometrist who will test the sight and provide glasses if he persuades the patient that glasses are needed, and (4) the shop selling eye glasses over the counter without examination of the eyes. The oculist is likely to charge from \$8 to \$25; the clinic, a fee of 25 or 50 cents or no fee at all for the examination, with a cost charge varying from \$1.50 to \$4.00 for the glasses; the optometrist or optician from \$2.00 to \$10.00, the examination being supposedly free; and the shop where glasses may be purchased over the counter, ten cents to a dollar or more a pair. According to public health standards, a person may receive proper attention only at the first two of these four places; but about one third of the population cannot afford to go to an oculist, and they are too proud to patronize a free clinic. Obviously they require another type of service. When other disorders are considered, similar dilemmas appear.

If the great mass of people with low incomes are to be saved from the pauperizing influences of the free clinic and, at the same time, be protected from the exploitation of clever quacks and skillful nostrum advertisers, and if they are to reap the benefits of modern medical science, its resources, including the service of specialists, when necessary, must be brought within the means of all. In the opinion of a considerable number of persons, this need is wisely met by the establishment of the pay clinic. Such an institution is defined by Davis and Warner as a clinic or dispensary "in which a fee is charged patients corresponding with the cost of the service rendered, including compensation for the physician."²⁴ Davis says of the pay clinic²⁵:

I am convinced that unless this class of service is provided by non-commercial organizations of a high grade, such as hospitals and other institutions maintained for public service, the public need is so great that commercial organizations, some under medical and some under merely business auspices, hiring cheap medical service, will be established.

From the standpoint of the interests of the medical profession, I believe that pay clinics properly conducted on a non-profit-making basis, as enterprises of the community or as outgrowths of well-organized hospitals, will be a direct benefit to all physicians of good standing. The salaries paid in such pay clinics will turn over to the profession considerable sums which now do not reach the profession at all, being expended chiefly for medicines, appliances, and quacks. Numbers of young men of good training will be enabled by such salaries to pursue clinical and scientific work without undue sacrifice, while carrying on and developing their practice. Through pay clinics I believe that a very much larger proportion of the medical profession, both in large cities and in smaller places, will be able to give the time to work in clinics and to secure the benefits of the facilities of clinics, both as to laboratories and also in opportunities for co-working and consultation with fellow practitioners.

The Cornell University Clinic ²⁶ was reorganized in November, 1921, to reach a large class of persons, who it was believed were able to pay something for medical service, but not the rate usually charged in private offices, particularly when the care of specialist or expensive diagnostic work was required. Another purpose was the improvement of facilities for the instruction of students and for scientific research. A special committee of the United Hospital Fund, supported by the Rockefeller Foundation, co-operated with the university in establishing the clinic. The following schedule of fees was announced:

General admission fee.....	\$ 1.00
Prescriptions (except expensive medicines).....	.25
Laboratory tests .....	.50 to \$ 5.00
X-rays	2.50 to 12.50
X-ray of complete gastro-intestinal tract.....	25.00
Minor operations	3.00 to 15.00
Fee in special diagnostic clinic.....	10.00

The opening of the clinic attracted unexpected attention, and it was somewhat overwhelmed by applications. During the first five months, 18,803 different individuals were ad-

mitted; and during the first year, 22,536. It is believed by the dean of the college that the publicity incident to the opening of the clinic influenced a number of persons with obscure and chronic cases to seek medical attention. Of those treated during the first five months, 23 per cent had had no previous medical care; 50 per cent had received treatment from private physicians and had made a change, they stated, because of expense, lack of improvement, or dissatisfaction with treatment.

The classification made by the clinic's registrars of 19,615 applicants indicates that, while 4,520 appeared to be unable to pay even the relatively low prices charged by the Cornell Clinic, only 322 apparently were financially able to pay the usual fees of private physicians. Both groups were rejected. For the purpose of judging the efficiency of the system of admission used by the registrars, 80 cases were visited in their homes. One out of the 80 was evidently able to pay a private physician and was thus unsuitable for admission to the Cornell Clinic. On the other hand, 20 (or 25 per cent) were judged, as a result of the visit, to be less well-to-do than the registrars had believed them to be, and most of these appeared unable to pay the Cornell Clinic fees.

The income from patients during the first year was approximately \$180,000, and the running expenses about \$232,000. In other words, each visit cost, on the average, \$2.03 and yielded \$1.57. All possible methods of increasing income and decreasing expenses are being considered. In order to make the clinic self-supporting, without change in the quality of the service, an increase in the fees may be necessary. No account is taken of the overhead expense of college administration.

During the first year, 929 physicians referred 1877 individual patients to the Cornell Clinic, some for diagnosis only and some for treatment.

The *Journal of the American Medical Association* says of the Cornell Pay Clinic ²⁷:

Such clinics can be successful and render an excellent and continuous service to the public when at the same time they establish a close co-operative relationship with the local practicing physicians. They should receive no patients able to pay a fee unless the patients are referred by the family physician—if they have one—or are received with his knowledge or approval; and, to prevent the appearance of competition, the fee charged by the clinic should be no less than that charged for a like service by the family physicians. Where clinics so conducted have back of them a well-known university or hospital, or when they are conducted by physicians of established reputations, they will meet a positive need in their respective communities.

A venereal disease pay clinic, somewhat too commercialized in the opinion of some persons, was established in Chicago a few years ago, and it has been treating a large number of patients. (See Figure 61.) If commercialized pay clinics spring up, as appears to be feared, it will be largely because medical schools and health agencies fail to meet the need for such facilities as pay clinics provide.

Health Centers.²⁸—The establishment in a single community of separate clinics for tuberculosis, mental hygiene, infant welfare, and other specific public health problems is likely to lead to a situation in which several physicians and nurses deal with the same family at the same time. Furthermore, the existence of many separate clinics tends to become unnecessarily expensive. Efforts have been made, therefore, to deal with the population as a unit and to bring together and to co-ordinate under one roof the various public health efforts of a community. The health center is one of the results of such efforts. Most health centers established prior to 1923 have dealt largely with diagnostic and preventive work, including educational activities. They usually include one or more public health clinics; but sometimes a "health center" is little more than the office of a public health nurse.

The idea of reaching out with a program of health activities to include a definite population unit was first applied

No Secret Disease Attacks to Mar This Home's Happiness



TO better safeguard our babies against infection from some secret disease was one of the motives which prompted the group of broad minded, public-spirited Chicago citizens whose names appear in this advertisement, to organize the Public Health Institute—for profit, but to render a real public service.

Outside of the medical profession few people realize to what an alarming extent the venereal social diseases—syphilis and gonorrhea—have invaded the sanctity of homes and their light upon innocent wives and helpless children.

Let us not doubt this. No higher authority should be quoted than Dr. Rupert Blue, former surgeon general, U. S. Public Health Service, who says: "Gonorrhea and syphilis constitute the most urgent, vital health problem confronting the country today. From time immemorial these diseases have been the scourge of mankind, flourishing in the darkest of ignorance and striking fearfully the innocent and helpless as well as the guilty. Now they must be exposed to the controlling light of universal knowledge."

Basic tenets of health are no less vigorous and uncorrupted in their times of warning. The one taught by the Institute State Board of Health is typical.

The venereal diseases are social diseases. They spare neither virtue nor innocence. Why deny the existence of an epidemic by pretending to ignore its presence? It is that, worse, or in any sense good policy? It would seem to be very much like the policy of the city search which, having its own eyes to design, believes it is safe.

The Toll Exacted in Lives, Human Wastage and Dollars

We are not appealing to sentiment. There is little sentiment in facts and figures. Yet these facts and figures are made as should cause you Chicago men and women to do some other thinking.

In the United States alone, according to carefully compiled statistics, there are twenty-four syphilis and gonorrhea—all annually more than 200,000 people. And Chicago contributes its quota in full measure. But appalling as it is, the toll of human lives is by no means the grossest indication that can be brought against these diseases.

Together they are responsible for 30 out of every 100 babies born dead, 20 out of every 100 people who are constructed to make up have their defective heredity to the next generation.

Every case of locomotor ataxia is syphilitic in origin. The same is true of parkinson. Our prominent medical authority states that from 25 to 50 per cent of the major operations performed upon women are due to gonorrheal infection and its sequent that about one-third

of the children marriages are due to the same cause.

We pride ourselves on our efficiency. Yet these secret diseases so lower the vitality of those affected that one authority who has given the subject close attention estimates the reduced efficiency a costing this country \$300,000,000 a year! How much of that reduced efficiency does Chicago pay?

These Diseases Must Be Wiped Out

The Public Health Institute is making remarkable headway in wiping out venereal diseases in Chicago. It is now more than two years since the Institute was founded, during which time its emancipations have steadily increased in number, and now in staff of physicians are treating approximately 300 men, women and children every week day—a monthly total of more than 20,000.

The facilities of the Public Health Institute are unequalled. Patients are examined and treated by thoroughly trained, skilled physicians, whose broad experience in treating these diseases is the best assurance that can be given that every case coming under their care will be treated according to the most approved methods known to medical science. The Institute maintains, as an auxiliary, the most completely equipped laboratory in America for its special work, where every diagnosis is verified by exact chemical, bacteriological and serological tests.

The utmost privacy possible is insured. Each patient, upon registering, receives a number and thereafter calls for his number by number only. Forty individual treatment rooms insure prompt attention.

On a different floor from the rest of department there is a special department for women and children—with trained nurses in constant attendance, insuring to the utmost comfort of the patient.

Any person coming to the Institute will find those in attendance kindly and courteous, he will return to his work with a heavy burden lifted, for he will know that the best that medicine affords is at work to get him well.

The cost of treatment is small, and is available on terms so liberal that any person regularly employed can afford it.

If from any cause whatever a person has reason to suspect infection from a "social disease"—and it should be noted that frequently a disease of this character lurks in the system for years without manifesting its presence—we urge the importance of an immediate consultation. Even a day's delay is dangerous—not only to the patient but also to those near and dear to him.

As for the person who already knows he is afflicted, let all people should undertake immediate treatment—the best that can be had.

Public Health Institute

4th Floor Release Building, 32 North State Street, Cor. Washington Street
Women's Department, 4th Floor Phone 10 A. M. to 8 P. M. Telephone 5844

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FIG. 61.—ONE OF THE NUMEROUS FULL PAGE NEWSPAPER ADVERTISEMENTS PUBLISHED IN 1921 AND 1922 BY A PRIVATE VENEREAL DISEASE CLINIC CALLED "THE PUBLIC HEALTH INSTITUTE."

This Institute, backed by prominent business men, has come into a field of public health work usually handled by official agencies or medical schools, because its officers believe, apparently, that these other agencies have not been reaching the large number of persons needing treatment.

about 1910 by William Charles White, in Pittsburgh, and Wilbur C. Phillips in Milwaukee. In 1913 the New York Milk Committee established its "health center" in the Syrian district of New York City, and two years later the City Board of Health inaugurated a comprehensive plan for a health center in the lower East Side. Later, such centers were established in Buffalo and Cleveland. By 1917, it is estimated that there were about a dozen health centers in the United States; in 1919, 72; and at the end of 1920, 385. A large number organized in 1920 were due to the activities of the American Red Cross. Interest seemed to have been at its height in 1920; in a bibliography on health centers subsequently published, 50 out of about 100 articles appeared during that year.²⁹ No data were available at the beginning of 1923, indicating the number of health centers then in existence.

*The East Harlem Health Center*³⁰ was established September 1, 1921, by the New York County Chapter of the American Red Cross in co-operation with the Department of Health of New York City and twenty-one health and family welfare agencies. It is located in three adjoining buildings, each having three stories and basement, in the geographical center of a congested district with a foreign population of about 100,000. The following agencies maintain local service in the building:

- American Red Cross, New York County Chapter
- Association for Improving the Condition of the Poor
- Association for the Aid of Crippled Children
- Association for the Prevention and Relief of Heart Disease
- Charity Organization Society
- Department of Health, City of New York
 - Bureau of Child Hygiene
 - Bureau of Preventable Diseases
- Henry Street Visiting Nurse Service
- Maternity Center Association
- State Charities Aid Association
- United Hebrew Charities

In addition, 11 non-resident agencies co-operate.

The building is painted white and stands in bold relief against adjoining buildings. It is popularly known in the community as "the Red Cross White House." The floor plans shown in Figure 62 indicate, though inadequately perhaps, the many varied activities carried on. During the first year of the Center's operation, ending August 31, 1922, 62,760 visits were made by 14,813 individuals, which indicated an increase of 81 per cent over the health service rendered in the district before the establishment of the Center. In addition, 41,000 visits were made to homes in the district by nurses, social workers, and others.

The 62,760 visits may be classified as follows: 42,107 to clinics; 6,451 to family welfare agencies; 2,685 to other health agencies in the building; and 11,517 to educational services.

The many activities of the East Harlem Health Center during this first year included the general medical examination of over 300 school children; the summer pre-school examination and follow-up of 1000 children; special health exhibits in the building and district; the distribution of educational leaflets; and a large number of health talks. Plans were made for a campaign against quack medical practice, also for the co-ordination and development of fresh-air work. The following schedule of health services for a single day will aid one in gaining an idea of the Center's activities:

8 A.M.—12:00 M.	Baby Health Station—Board of Health, Bureau of Child Hygiene
9 A.M.—12:30 P.M.	Oral Hygiene Clinic for Expectant Mothers under supervision and pre-school children—American Red Cross
9 A.M.—5:00 P.M.	Oral Hygiene Clinic—American Red Cross
9 A.M.—5:00 P.M.	Jefferson Auxiliary—Board of Health, Bureau of Preventable Diseases
10 A.M.—12:00 M.	Psychiatric Clinic—State Charities Aid Association
1:00—4:00 P.M.	Eye Clinic—Board of Health, Bureau of Child Hygiene

- 2:00- 4:00 P.M. Schick Test—Board of Health, Bureau of Preventable Diseases
- 2:00- 4:00 P.M. Jefferson Clinic—Board of Health, Bureau of Preventable Diseases
- 3:00- 5:00 P.M. Cardiac Clinic—Association for Prevention and Relief of Heart Diseases
- 3:00- 5:00 P.M. Nutrition Clinic—Child Health Station No. 4, American Red Cross, New York County Chapter (Girls 5-9 years)
- 7:30- 9:00 P.M. Jefferson Clinic—Board of Health, Bureau of Preventable Diseases
- 8:15-10:15 P.M. General Medical Examination Clinic—Board of Health, Bureau of Preventable Diseases

The New Haven Health Center ³¹ is a place where the major health agencies of New Haven work together for the purpose of offering the people in Wards 10, 11, and 12 the best possible health service. It gains its support from the Department of Health, the Visiting Nurse Association, the American Red Cross, and the New Haven Medical Association.

The Health Department of the City of Boston ³² established a *health unit* on the West End of that city in 1916 to determine what effect a program of education would have in reducing disease and death among infants, children, and adults in that congested area. The Board of Health reports that

Wonderful results were accomplished for the people of the district during the hot summer of last year, and the success of the Unit was soon apparent. Nurses, visitors, and physicians kept constantly in touch with the people, using the Unit as headquarters, and with the outbreak of poliomyelitis in the city the advantages of the Unit were shown to a still greater extent. The Unit seems to be a mecca for the afflicted and the worried, and the women and children came with their troubles, and oftentimes imaginary illnesses, only to be sent home with their fears allayed and themselves comforted.

The agencies originally represented at the Unit were: the Health Department, Consumptives' Hospital Department,

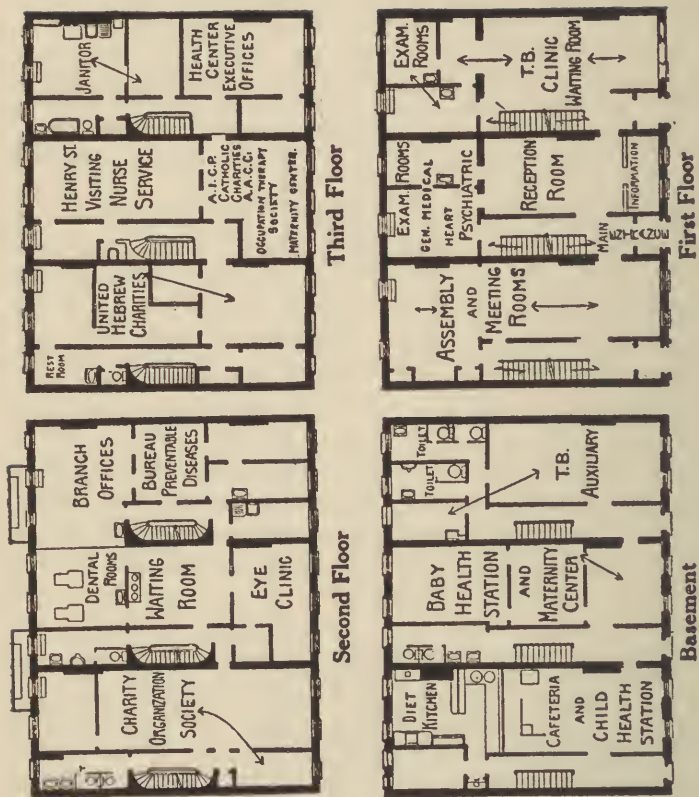


FIG. 62.—FLOOR PLAN OF THE EAST HARLEM HEALTH CENTER, NEW YORK CITY.

Instructive District Nursing Association, Boston Dispensary, Milk and Baby Hygiene Association, Associated Charities and Hebrew Federated Charities, Women's Municipal League, and Mothers' Club of the West End. Through the co-operation of all these health agencies, duplication and overlapping of work were eliminated, and the Unit became a clearing house for the health work of the district.

In 1922, 62,471 visits and contacts were made by various agencies represented at the Unit. Exhibits, baby shows, and lectures are held from time to time; dietetic, posture, prenatal and home nursing classes are conducted weekly. A dental unit was opened in 1922, and a general medical advisory clinic was in process of formation, so that routine examinations might be given.

The number of agencies represented at the Unit had considerably increased by the end of 1922, and the gratifying results obtained had justified the development of plans for the establishment of two health centers in other sections of the city.

In Philadelphia the first health center was established in 1916 by the Division of Child Hygiene of the Department of Public Health.³³ Others have been gradually added, until at the beginning of 1923 there were ten health centers in the congested districts of the city. To some of these centers 75 to 100 babies are brought per day. In 1922 there were a total of over 163,000 visits to health centers, including 62,105 registered first visits. Advice was given to mothers regarding the care of 10,856 babies under one year of age and 9,370 children of pre-school age. A nurse is always in attendance, and on certain days at special hours doctors hold clinics for the examination of expectant mothers, babies, and older children.

There were in 1923, dental, prenatal, nutrition, heart, and Schick testing clinics at each of the ten health centers. Patients are also referred from these centers to neuropsych-

chiatric and tuberculosis clinics in the Philadelphia General Hospital, and to an eye dispensary at the City Hall.

The Division of Health of Cleveland, Ohio,³⁴ has divided the city into eight health districts, each having a central office or health center. It is hoped that eventually each district will have a full-time physician to serve as a deputy health officer; in 1922 each of them had a supervising public health nurse and two stenographers. The eight districts are each divided into eight to ten sub-districts, with a public health nurse in each giving attention to the following lines of work: (1) contagious diseases, (2) child hygiene, (3) tuberculosis, (4) limited supervision of parochial school pupils, (5) general sanitation and housing. In each district, a tuberculosis clinic is maintained, also a baby clinic.

The Support of Dispensaries by Physicians and the Public.—Many physicians feel that dispensaries take from the private practitioner business which rightfully belongs to him. On the other hand, these institutions are widely supported, not only by the physicians who participate, but by many others.

The survey of the American Medical Association in 1922 gives information from 615 general dispensaries on the participation of physicians.³⁵ In these, 1,268 full-time physicians are employed and 9,929 part-time physicians. These figures do not include those employed by 300 additional general dispensaries and almost 2,500 special clinics.

The sources of financial support are reported to the American Medical Association by 651 general dispensaries. Of these, 34 per cent have endowments, 58 per cent are supported partially by patients, 34 per cent by gifts, 5 per cent by county aid, 14 per cent by city aid, 10 per cent by state aid, and 7 per cent by federal aid.³⁶

The American Medical Association reports the main facts brought out by its survey, as follows ³⁷:

1. There is a steady increase in the number of patients seeking treatment in general dispensaries.
2. There has been an unprecedented increase since the war in the number of special clinics and dispensaries, such as those for tuberculosis, venereal disease, mental hygiene, and child hygiene.
3. There is great need for individualized study and treatment of dispensary patients, to counteract what seems to be a prevailing tendency to routinization.
4. There is need of a closer bond between the out-patient service and the other service of hospitals, and this will be best met by having the hospital and the out-patient staff identical and by having unified records.
5. In the matter of finances there is an increasing tendency to charge nominal fees, thereby placing part of the cost of an institution on the patient.
6. A general increase is noted in the use of social service workers to see that patients continue their treatment, and to investigate their social and financial status so as to prevent pauperizing.
7. The difficulty of securing satisfactory data is increased by the inadequacy of clinical and office record systems in a large number of institutions.
8. There is a great and increasing amount of educational work, especially the teaching of internes, medical students, graduates, and pupil nurses.

In summing up the situation, observation should be made also of the growing recognition of the need for the pay clinic, and for the co-ordination of community health activities such as is found in the health center.

CHAPTER XV

HEALTH SERVICE IN INDUSTRY

WHEN Mary Smith was graduated from high school she applied at a large insurance company for an office position, was tentatively accepted and, following a physical and mental examination which revealed a satisfactory condition, was told to report for work. She was assigned a locker, provided with glass and towel, and soon became absorbed in her duties. At eleven and three o'clock each day there was a five-minute recess for relaxation or exercise with open windows. At twelve-thirty a hot lunch was served in pleasant surroundings without cost. At four-thirty the day's work was over; on Saturdays it stopped at twelve. After six months with the company, Mary was invited to the dental division, where her teeth were cleaned and examined free of charge. She was advised to go to her dentist to have certain cavities filled, and a dental hygienist instructed her in regard to the proper method of brushing her teeth. Six months later a re-examination was made. Several times Mary had minor ailments such as a cold or a finger infection. Her supervisor sent her promptly to the dispensary each time, where she found a staff of three doctors and four nurses constantly in attendance. On one occasion, because of a hard cold, she was away from the office several days, and the second day of her absence she received a call from the company's nurse. It rained unexpectedly one day, and one of the 6,000 umbrellas, provided by the company for unexpected weather conditions, was lent to her. Last June, when Mary's story was told, she had not yet availed herself of all

the opportunities for health promotion afforded by the company. There were classes in physical education held in the gymnasium, an annual field day, girls' basketball teams, tennis and swimming meets. Mary Smith is only one of 6,000 employees who are beneficiaries of the health service of the Metropolitan Life Insurance Company, and this company is only one of a large and increasing number of alert, progressive organizations which believe that it pays in dollars and cents to provide health service.¹

Significance of Industrial Health Service.—Of the 41,614,248 gainfully employed persons in the United States in 1920² probably 20,000,000 were employed in factories or other establishments in sufficiently large groups to make health service practicable. These represent, through their families, a total population of possibly 50,000,000—almost half the population of the United States. Since, through health service in industry, efforts are made to prevent disease not only among the wage earners, but among their families, the development of the industrial hygiene program appears to be a matter of first importance to the nation's health.

There is a vast amount of inefficiency and wasted energy in industry due to disabling diseases and minor ailments, most of which are preventable. Industrial hygiene prevents disease, particularly occupational disease. The development of health service among the industries of the United States will bring about greater efficiency in production, and will make possible an ever-expanding capacity among the workers for the enjoyment of life.

Status of Industrial Health Service in 1922.—The industrial depression following the war seems to have greatly retarded the development of industrial health work. One firm wrote in August, 1922: "We had a first-class medical organization built up and ready to commence on a comprehensive program of health work when the depression reduced our operating force to such small proportions that we have postponed the matter for the present."

Another firm reported at the same time that, owing to the business depression and consequent necessity for retrenchment, its department of industrial hygiene had been discontinued.³

No central agency in the United States maintains a directory of industrial organizations conducting health service.

In 1922 it seemed difficult even to estimate the status of industrial hygiene, but an estimate made in 1920 showed that there were 900 establishments employing 1,500 part-time and full-time industrial physicians.⁴ This number was then constantly increasing. The American Medical Association stated in August, 1922, "The number of industrial dispensaries has been placed at something more than 400 by some who are in touch with industrial medicine. This estimate is very conservative."⁵

Plans of Organization.—Various plans have been formulated for carrying on health service in industry. In a considerable number of large factories, the following departments have a direct or indirect relationship to the health of employees: (1) health or medical, (2) employment, (3) sanitation and safety engineering, (4) visiting nurse service, (5) commissary, (6) recreation—games and athletics, (7) housing, (8) mutual benefit associations, (9) banking and loan service. Frequently medical work, visiting nurse service, and sanitation are co-ordinate subdivisions of a health department, and the physician in charge is responsible for all three types of work. In addition, he has considerable to do with employment and may, as his work develops, interest himself increasingly in recreation, housing, and other types of service.⁶

*Plan for a Large Factory.*⁷—The service director of the Norton Company, of Worcester, Mass., W. Irving Clark, Jr., suggests a plan of organization for a medical department in a large factory. The department, according to his plan, is under the control of a chief physician, who is responsible to the service director, and has as assistants



THE OPERATING ROOM OF THE AMERICAN ROLLING MILLS COMPANY

The medical department consists of three full-time physicians, six graduate female nurses, five experienced male nurses, and six other employees. Every applicant for employment is given a careful physical examination.

various physicians, surgeons, and nurses. The activities are carried on through three sections—health, sanitation, and visiting nursing.

The health section has for its equipment a large central dispensary and, when necessary, smaller dispensaries to cover adequately all buildings of the plant. At the central dispensary or nearby, are an X-ray room, a dental room, and, when necessary, an oculist's room. In addition to the chief physician, there is a minimum of one full-time physician for every 2,000 employees, also a full-time nurse to every thousand. The functions of the health department are as follows:

1. The physical examination of all applicants for positions in the factory.
2. The re-examination of all employees transferred from one department to another.
3. The periodic examination of workers employed in departments where there is a health hazard.
4. A periodic examination of all workers who have physical defects needing following up.
5. The placing of physically defective workmen in departments where the work will not prove injurious.
6. The diagnosis and, in certain cases, the treatment of workers applying to the dispensary for medical care.
7. Co-operation where possible with the family physician of sick and defective employees.
8. Diagnosis and treatment of workers injured during employment.
9. Diagnosis and, in some cases, treatment of workers having surgical conditions not the result of employment.
10. Spreading health publicity by lectures, and by leaflets and similar publications.

Each applicant for work received by the employment department is sent to the health department for a complete physical examination. On the basis of this inspection all applicants are divided into four groups: persons who appear to be in normal physical condition are classified in Group

"A"; those having slight defects in Group "B"; applicants having such defects as will bar them from certain kinds of employment are placed in Group "C"; while those who appear unfit for any kind of work in the industry are placed in Group "D."

After examination the applicant is sent back to the employment department with a report of the examination. If he is in class "A" or "B," he is ready to be put to work at once. If he is in class "C," he waits until the examining physician can discuss with the employment manager the type of work for which he appears best fitted.

As much help as possible is given to the Class "D" men by the health department. To reject a man without telling him of his condition and advising him what to do, says Dr. Clark, is unfair to the man and to society. If he has tuberculosis or other serious condition, he should receive special attention and be directed to a proper clinic.

Those who are put to work are classified in two main groups—standard and sub-standard. The examination cards of "sub-standard" workers are "flagged" with a colored signal indicating the defect, and once in three months they are re-examined to see how they are reacting to their work. "Standard" employees engaged in occupations hazardous to health also are inspected periodically for signs of industrial disease or poisoning. All workers are examined again when they are transferred from one department to another.

When a person begins work he is shown the nearest dispensary and instructed to report there in case of any injury or illness, no matter how slight. In case of sickness or injury, the following procedure is recommended:

1. Employee notifies foreman of sickness or accident.
2. Foreman directs employee to nearest dispensary.
3. Nurse at dispensary takes short history of case and examines into condition complained of.
4. If the condition is simple, such as a scratch or constipation, the condition is treated and patient told to report back next day.

5. The case is entered on a card or slip which is forwarded to the central dispensary for filing and notation.

6. Patient's name, number, and department are entered in a book; and a note made as to the day the patient should return to the dispensary for treatment.

7. Patient returns to work, or in case of serious accident or sickness is sent home or to a hospital.

7a. If patient is sent home or to a hospital, the visiting nurse service is notified.

8. When patient returns for retreatment, what is done is recorded, another notation is made in the book, and date when patient should return, unless discharged, is entered.

The chief of the sanitary section, who is an assistant to the chief physician, is responsible for the control of (1) ventilation, (2) illumination, (3) heat and humidity, (4) dust, (5) drinking water, and (6) sewage disposal. While the setting up of sanitary appliances is the business of the engineering department, the medical department should be consulted when new materials are purchased and installed, and is responsible for the maintenance of such appliances.

Proper ventilation is of prime importance to the health of the worker. While the increase of carbon dioxide in the air is not now considered to be so harmful to the healthy worker as was formerly believed, its presence is used as an indicator of the general condition of the air. Factory air should not contain more than six parts of carbon dioxide in 10,000. This means that 3,000 cubic feet of pure air should be supplied per person per hour. It is especially important to maintain proper temperature and to prevent high humidity. Recent investigations have shown that motion will help greatly in keeping the air in good condition.

Illumination is now measured in terms of "foot candles" by a piece of apparatus called the photometer. The National Safety Council has recommended standards of lighting for various working conditions. For instance, according to their recommendations, 2 to 4 "foot candles" are required for rough work, while 10 to 15 "foot candles" are necessary

for such work as watchmaking and engraving. Most factories are under-illuminated.

Heat and humidity become a special health hazard in connection with some manufacturing processes. In such instances those employed are periodically examined.

Inorganic dust, when inhaled over a long period of time, produces a condition known as fibrosis of the lungs. The chief surgeon and the head of the sanitation section take measures to remove dust by suction apparatus.

A supply of pure drinking water, of course, is essential. This involves no special measures except in districts not supplied by a municipal water system. When a plant is isolated and has its own water supply, frequent tests are made.

In connection with the disposal of sewage, special apparatus is necessary only when there are no connections with a municipal sewage system. In all instances it is important that closets and urinals be kept in the best condition. When a sanitation service is inaugurated under the control of the health department, it is sometimes necessary to utilize special measures to remedy the effects of former carelessness and make the toilet facilities satisfactory.

All janitor service is under the supervision of the chief of the sanitary section. Locker rooms are cleaned daily and the lockers themselves cleaned once a month. Systematic attention is given to the washing of windows and electric lights; all floor space is kept free from dirt and dust. Often it is necessary to provide measures for the trapping of flies and rats.

The chief of the visiting nurse service, through her assistants, acts as a connecting link between the health department and the worker in his home. The employment department sends to her daily a list of all those absent because of accident or sickness, and she sees that each home is visited.

The visiting nurse, of course, must be resourceful and

tactful. If the sick employee has no family physician, she must be able to recommend one whose charges will be reasonable. Hospital care may sometimes be necessary, and she may perhaps take the employee to the hospital in her car. Various emergencies must be faced, even including arrangements for an employee's funeral. Often the factory nurse turns the patient over to another nurse employed by the city or visiting nurse association, and merely keeps in touch with developments for the information of the employment department.

*Plan for a Small Factory.*⁸—While health service in a small factory is equally important with that in a large establishment, all the equipment and measures above described are not essential. One of two systems may be chosen. One is to employ a part-time physician. He should live reasonably near the factory and be available for certain hours regularly every week. The other plan provides for the employment of a full-time physician by a group of factories located close together.

In developing a program of health work under the first plan the physician should first visit the factory and become acquainted with all hazardous aspects of the business. A dispensary should be established and, if possible, a nurse employed. In factories having only a very few employees, one of the workers can sometimes be found who has had experience in first-aid work and, after some special instruction, he can be depended upon in case of emergency. As soon as practicable, all the foremen are called together and, with the superintendent or employer and nurse or first-aid worker present, they should be given a talk by the physician regarding the maintenance of health in the plant, with some demonstration of first-aid work. The physician visits the factory regularly several times each week, and advises with the superintendent regarding the improvement of its sanitary conditions. As early as feasible, he begins the physical inspection of all the workers, omitting any who may object.

If examinations are inaugurated with the proper spirit on the part of the superintendent and physician, says Dr. Clark, workers will welcome them.

When a number of small factories jointly maintain a health department, there is usually a central dispensary with a group of doctors, a physician and one or more nurses being always on duty. This plan has obvious advantages, when it is practicable from the standpoint of location and co-operation.

An alert city health officer may find here a large opportunity, especially in an industrial community. If he wishes systematically and continuously to reach as large a proportion of the population under his jurisdiction as possible, he perhaps can find no better way than to bring together the heads of the small industries for the purpose of developing one or more centralized industrial health services.

Specific Programs.—Various types of health activities carried on by several establishments may be briefly described. The medical department of the *International Harvester Company*⁹ was organized in 1902 primarily for the treatment of injured employees. In 1920 it was conducting a well rounded program and employed 25 full-time physicians, 7 part-time physicians, 17 nurses, and 5 dentists. Every applicant for work is given a physical examination before employment. In 1920, 94 per cent of 30,735 persons examined were placed in Class "A," thus being judged fit for any job in the company's factories; 1,248 were rated for selected employment only; 637 were found so physically defective that it was necessary to reject them. The company also encourages periodical examination.

A tuberculosis division was established in 1911, and in the ten years following, 1,022 tuberculosis cases were discovered out of an average force of 30,000 to 40,000 employees. With a very few exceptions, the company and the Employees Benefit Association have borne the expense of treating these patients. Of those given sanatorium care,

52 per cent were able to return to work, with subsequent relapse of less than 5 per cent.

A dental division was created in 1916. In a single recent year, the company's dentists examined 2,420 new cases, 2,525 teeth were extracted, 11,363 treatments were given, and 2,723 temporary and 2,067 permanent fillings were made. Yet, in justice to outside dentists, the company's dentists do little dental work compared with the amount that comes to them; they spend much of their time in advising employees how to take care of their teeth.

The sanitation of all the company's factories and offices is in charge of the chief surgeon. Frequent sanitary inspections are made; drinking fountains, ventilated metal lockers, and wash sinks (with running water only) are provided, also shower baths where needed.

At plants where women are employed, rest rooms are to be found in charge of matrons. Night work by women is prohibited. No woman under eighteen years of age is employed for factory work. A Saturday half-holiday is observed in all plants throughout the year.

The company assists in the maintenance of an Employees' Benefit Association, already referred to.* In addition to what the workers pay to the Association in small amounts deducted from wages, the company contributes annually a large sum. Benefits cover all non-occupational accidents, sickness and death from natural causes. In twelve recent years the benefits paid by the Association amounted to over \$4,800,000.

The company established in 1919 its industrial council plan whereby, according to the chief surgeon, "all employees are given an equal voice with the management in the consideration and establishment of all policies relating to wages, hours, working conditions, and all matters of mutual interest." To one understanding the conditions in industry necessary to mental health and contentment, the successful

* Various forms of sickness insurance are discussed later. See page 351.

inauguration of this plan is of particular significance. It is now in operation at all the company's plants in the United States and Canada.

The medical director of *Montgomery Ward and Company*¹⁰ believes that this firm has been able to accomplish some remarkable results in health work among its employees. Tuberculosis has been attacked through the dispensing of malted milk to those who are underweight and in other ways indicate susceptibility to the disease. All such employees are given a twelve-ounce glass, double strength, at ten in the morning and at three in the afternoon. Although the cost has been heavy, the company considers the investment a good one. A hospital is maintained, where treatment is provided without cost to employees. When the medical director thinks best, special service outside the hospital is also arranged, such as special nursing, massage, baths, and vaccination. A men's dispensary and a women's dispensary, also a girls' rest room in charge of a nurse, are maintained. The nurse keeps a supply of shoes and stockings for girls who may be caught in the rain on their way to work; clothing is dried and made ready for use at the end of the day. A stock of umbrellas is kept to be lent to employees when unexpected rains come.

The health work in this establishment has brought one incidental but important result. Its annual catalogue, reaching over a million homes, formerly contained many pages of drug advertisements. Through the medical department, attention was called to the questionable value of most of the drugs advertised, and this business was discontinued. The elimination of one particular patent medicine, says the medical director, cost the house \$100,000 a year.

*The Colorado Fuel and Iron Company*¹¹ provides a medical department for its 12,000 employees, each of whom pays a dollar a month. This, with an appropriation from the company, provides a fund for the hospital treatment of injuries and serious illnesses, and for medical service in

the homes. In the case of those employees living in the various mining camps, this service is extended to their families. Visiting nurses are employed to assist the physicians in first aid to sick and injured workers, but their principal function is the teaching of hygiene among the families of the miners. Free dental and optical service is offered to the children of all employees. Teeth are cleaned and filled when necessary and no charge is made. Eyes are examined free and glasses, when they are needed, are sold at wholesale prices.

*The Goodyear Tire and Rubber Company*¹² maintains, in addition to its medical service, a clubhouse and an athletic field for the use of employees. On the athletic field there are two baseball diamonds, three tennis courts, a cinder track, and a soccer field where scheduled games are played in season. In the clubhouse, in addition to facilities for social and educational activities, are a large gymnasium, twelve bowling alleys, and two handball courts. Under the management of The Employees' Activities Committee, these facilities are used to their fullest extent by organized divisional teams in basketball, volley ball, indoor baseball, and by handball tournaments. Regular gymnasium classes for office employees are held three evenings a week. The Flying Squadron (about 400 special factory employees) receives special gymnasium instruction two days a week, for which time they are paid by the company.

*The Ford Motor Company*¹³ rejects no applicant because of his physical condition; men are examined after being hired, not before. Work has been found for 9,563 sub-normal men, including 10 totally blind, 37 deaf and dumb, and 234 with only one foot or one leg. The Ford medical service includes the maintenance of a special office where a physician may be consulted in confidence regarding venereal diseases. Health education is provided through articles in the plant paper on the prevention of disease. There is an athletic park consisting of a 20-acre plot, divided into

two football fields, two baseball diamonds, 16 tennis courts, a children's playground, and a rest park. During the winter the greater part of the park is made into an ice skating pond.

*The Illinois Bell Telephone Company*¹⁴ has a staff of doctors consisting of a Division Medical Director, Local Medical Director, also seven to nine physicians, four of whom are women, two of these being assigned exclusively to the examination of women applicants. All are employed a half day, five days each week. The company maintains an extensive health service with many of the features already described, including a benefit plan which provides payments during absences on account of sickness or accident. In its downtown office building, where space for recreational features is limited, a tennis court has been installed on the roof. Margaret Mackin Hall, a home in the country near Chicago with 40 acres of land, has been made available for convalescent girls.

Among other industries which have inaugurated a health service may be mentioned the Cadillac Motor Company, the United Shoe Machinery Company, B. Altman & Co., the J. F. Tapley Co. and various companies in the iron and steel industry. Their programs of health service have been interestingly described in *The Modern Hospital*.¹⁵

Types of Health Measures in 431 Establishments.—The Department of Labor, in 1916-17, through a staff of field agents, visited about 1,000 establishments reported to be doing some kind of welfare work, not for the purpose of discovering how many industries conduct such activities, but to discover which measures appear to be the least expensive, most easily administered and popular, in contrast to those which are most costly and least satisfactory. The investigation covered twelve months. Thirty-one states were visited, and a report was published in 1919 covering 431 establishments which were doing effective work.¹⁶



PART OF THE EQUIPMENT AT MARGARET MACKIN HALL—A CONVALESCENT HOME MAINTAINED BY THE ILLINOIS BELL TELEPHONE COMPANY

Of this number 171 reported the employment of one or more physicians; 181 maintain one or more nurses; and 131, one or more first-aid attendants. Periodic examinations, in a few instances of all employees, were given by 49 establishments, 17 of them annually and 6 semi-annually. Inspections of food handlers and persons exposed to occupational diseases are made by several firms weekly or bi-monthly. It appeared that the main purpose of the entrance examination was to exclude those who were undesirable from the standpoint of the employer, although it was found that occasionally there was a willingness to accept tuberculous persons. The entire expenses of employees who, after a reasonable length of time, developed tuberculosis was being paid by 32 firms, and 32 additional companies were sending employees to sanitariums.

In 106 establishments, rest periods were being granted to all or part of employees. It appeared quite usual to give office girls in the dictaphone and stenography divisions ten to fifteen minutes for relaxation, and in 22 department stores, rest periods of five to twenty minutes were being given twice daily, usually to the majority of employees. To afford relief in monotonous and fatiguing employments, change of occupation was provided in 11 instances. Although 81 per cent of 389 industries gave vacations with pay to salaried employees, only 16 establishments extended them to include the wage earners. Furthermore, although 50 per cent of the 389 firms gave sick leave with pay to salaried workers, only eight of these companies gave such aid to all other employees. Lunch rooms were provided by 223 establishments; only two companies which had installed lunch rooms had given them up. In only 18 instances were these eating places for office employees only; in the other 205 establishments, factory employees as well were served. It appeared not unusual to provide umbrellas for rainy days, a deposit of five cents being required, and five companies report that stockings, slippers, and skirts are lent

to women employees who get wet rainy mornings on their way to work.

About one third of the firms investigated were found to be doing health and social betterment work in communities in which the families of employees live. Among the various types of work reported were the installing of sewerage and water systems; the draining or filling-in of pools and lowlands, or their treatment with crude petroleum, to exterminate the mosquito; the screening of houses, at cost or without charge, and the distribution of circulars explaining in a simple way the dangers of the house fly; provision and care of garbage cans; bacteriological analysis of the water used for drinking; and regulation of the milk supply.

A visiting nurse, or someone acting in that capacity, was reported by 85 companies who, in addition to other duties, instructs the women of the community in nursing and teaches the value of cleanliness, fresh air, and sunshine.

Of the total number of firms visited, the health and welfare work was administered in 231 instances by the employer alone, and in the other 200 instances by employer and employees acting jointly. A welfare secretary was employed by 141 establishments, and outside agencies, such as the Y. M. C. A. and Y. W. C. A., co-operated in 154 instances.*

Health Service in Retail Establishments.—Medical work in retail establishments has less to do with accidents and more to do with sickness than in manufacturing plants. Realizing the importance of the sickness problem, an increasing number of department stores and other retail establishments are developing health service for employees.

One store employing about 4,000 persons has a health department of a dozen rooms. It maintains a staff of one full-time and one half-time physician, six trained nurses, a physician's secretary, two clerks, and a physical director.

*Provisions made by these 431 establishments for recreation and athletics have been referred to in Chapter XIII.

About one half of the employees go to the health department each month for relief and advice.

In December, 1919, at the request of various merchants, the Division of Industrial Hygiene of the Harvard Medical School agreed to make a study of health conditions in stores. Surveys were undertaken and recommendations made. As a result there was appointed by the industrial hygiene committee of the Harvard School of Public Health, a medical director who maintains general supervision over the health work in the stores which established health services following the survey. A group of store physicians employed by these firms meets weekly in Boston to discuss plans and exchange helpful experiences.¹⁷

Does It Pay?—An engineer with a reputation for carefulness, employed by one of the large railroads, ran his engine past a stop signal in broad daylight. He was unable to give any explanation for this act. The seriousness of such conduct called for an investigation. Although he appeared to be in good health, he was given a thorough examination. The Wassermann test revealed the presence of syphilis; in about a year's time he was dead.¹⁸

The officers of another road were baffled in an attempt to find an explanation for four accidents. After thorough investigation, it was found that in each case the person responsible for the accident had suffered from paresis, a result of syphilis.¹⁹

Surely it would have paid the management of these two railroads to have inaugurated a system of medical examinations, at least of train crews.

The average cost of maintaining a complete medical department appears to be about \$6 per year per position in the factory. But there is considerable variation in costs. One survey in 1917 showed the average annual cost of medical and surgical supervision in 95 factories to be \$2.21 per employee. On the other hand, in one large establish-

ment in Cleveland the cost (about 1920) was \$10.92 per employee per year, and in another \$11.23.²⁰

Various authors do not agree as to the money value of medical service in industry. One of them apparently considers it more satisfactory to evaluate it in other terms. He sums up its benefits to the management as follows: ²¹

1. Reduces time loss due to sickness and epidemics.
2. Reduces compensation for accident, disability, deformities, and death.
3. Increases output by steadier working force.
4. Decreases hiring of new employees at a great financial saving.
5. Increases the number of old employees with their constantly increasing value.
6. Increases general efficiency of force.
7. Secures good will of employees.

The time lost on account of illness in 1921 among employees of The National Cash Register Company was reduced, through its health service, to an average of 11½ hours per employee for the entire year. Assuming that the employees of factories without efficient medical service lose an average of 6 to 8 days per year,* this company believes that during a year it has saved, therefore, approximately 50 hours per employee. For its 6,000 employees it considers that this means a saving of \$120,000. The cost of health service is estimated at \$76,000 per year. This leaves, it will be observed, a large net saving.²²

"Why do you have a medical department?" a considerable number of responsible representatives of industry were asked by C. D. Selby.²³ A few of the many replies follow:

"It is only human that we should take care of the men injured in our service."

"It is just as necessary as a cost department or any other non-producing department."

"Health education will reduce absenteeism 50 per cent."

"It keeps the men on the job."

* See page 37.

"Instruction to the new men as they pass through the dispensary upon employment has reduced accidents by 50 per cent in four months."

"It promotes a feeling of good will towards the management. It has saved us a strike. It increases earning capacity by making men regular and dependable. Wages have increased 68 per cent in seven years and the cost of material has gone up, as you know, but our cost of production none."

"It saves us money."

Weaknesses in Industrial Health Programs.—Among the objections offered to the kind of programs herein described are the following: (1) the compulsory feature of the physical examination prior to employment, and (2) the tendency among employers to develop a spirit of paternalism.

The compulsory examination has been opposed by many labor leaders.²⁴ A California labor editor writes:

There seems to be an epidemic on among employers for the physical examination of employees. These examinations are conducted more in the interests of profits than for the improvement of health conditions, and labor must insist that there shall be a well-defined limit to them, until such time as ample provision shall have been made for the safeguarding of the health of the worker and caring for those excluded from the privilege of working because of the examinations.

The steel strikers in 1920 made a demand that physical examinations be abolished. William Green, of the United Mine Workers of America, represents a possibly better-balanced point of view. He says:

. . . if the primary purpose of physical examination is to exclude the physically unfit, then the wage earners are unalterably opposed to such physical examination. It would be inhuman and uncivilized to adopt a policy of ascertaining who the physically unfit were, for the mere purpose of closing the door of opportunity to them. Even the savage would not do that, and surely in this twentieth-century, highly developed civilization we are not attempt-

ing to foster a policy that is going to throw upon the scrap heap as helpless the physically unfit. They must be taken care of in some manner.

. . . Labor has no objection to physical examination or to medical supervision when the purpose of it all is praiseworthy, as I have stated, but they will oppose a policy that has for its purpose the exclusion of him who may be diseased or physically deformed.

One firm, it will be remembered, gives the examination after the man is hired and rejects no one on the basis of his physical condition.*

The charge that industrial health work develops paternalism may be justified in many establishments in which the worker has no opportunity to participate in the control of industrial relations. In some instances, he may feel the paternalistic spirit of the employer; in other instances, he may be quite content to let the employer assume the responsibility for his health and that of the members of his family.

Workers' Health Departments.—Following a strike in 1910 in the cloak, suit and skirt industry of New York, a Joint Board of Sanitary Control was established, made up of representatives of the public, employers, and the garment trades union.²⁵ A clinic was opened which, from 1912 to 1919, made 27,640 medical examinations of garment workers; in 1917, a dental clinic was added. The year following, the New York locals of the International Ladies' Garment Workers Union decided to take over the charge of the clinics from the jurisdiction of the Joint Board of Sanitary Control. They believed that their health is their own responsibility and that the clinic should be financed by themselves instead of jointly by employers and workers.

By 1922, this enterprise had developed into the *Union Health Center*, which included a nose, throat, eye, and ear clinic, as well as a general medical and dental clinic. In 1922, 15,767 medical examinations were made of garment workers. The dental clinic alone had an income that year

* See page 315.

of over \$48,000 and treated 3,693 patients. Every applicant for membership in the union is examined, a law having been passed requiring such examination as a condition of membership. Although treatment is given when members of the union become sick, the emphasis is placed upon prevention, and there is an extensive program of educational activities for this purpose.

There is now in active operation the *Workers' Health Bureau, Inc.*²⁶ of New York City which, through its advisory committee of health experts, will organize health departments for trade unions. These health departments as planned by the Bureau, states a circular, are for the purpose of affording every member of a trade union:

1. A careful examination of the entire body, made by a doctor, every year, with blood tests and water tests.
2. Further examinations where there are signs of lead or other poisons, and treatment until the disease is controlled or cured.
3. Mouth examination given by a dentist, advising necessary treatment.
4. Thorough cleansing of the teeth twice a year.
5. X-ray examination where the lungs, chest, teeth, stomach, or any other part of the body needs special attention.
6. Nurse to assist doctors and visit the home, giving instruction and help in carrying out doctors' orders.
7. Health education for members and their wives, to be given by doctors and nurses for the purpose of teaching:
 - How the body works.
 - How to care for its parts.
 - How to prevent sickness.
 - How to protect the body against diseases and dangers.

The advisory committee of the Bureau is made up of scientists of high national reputation and of various labor leaders. Within the first year of its existence, the Bureau organized only one trade union health department. It was the Journeymen Painters and Allied Crafts Health Department in New York City. It is maintained by six painters' locals.

CHAPTER XVI

OTHER SIGNIFICANT HEALTH ACTIVITIES

OTHER health measures which have had an effective part in the conquest of disease include public health nursing, the periodic examination, and popular health education. Each will be briefly discussed in this chapter.

Public Health Nursing.—Public health nursing plays a prominent part in city and county health organizations, dispensaries, school health work, and industrial health service. On account of its importance it requires further attention.

What is a public health nurse?

The question has frequently been asked, especially by private practitioners, some of whom have appeared to be rather critical of public health nursing. It has been answered by a committee of eminent physicians, nurses, and other sanitarians in a report on nursing education.¹ It states:

The new educational objectives of the health administrator may be approached to a limited extent by mass methods. The printed page, the public lecture, the exhibit, the cinematograph, the radiogram, help to prepare the ground and make success easier. The ultimate victory over ignorance is, however, rarely attained in such ways. Direct personal contact with the conditions of the individual life is essential to success in a matter so truly personal as hygiene. We have sought during the past twenty years for a missionary to carry the message of health into each individual home; and in America we have found this messenger of health in the public health nurse. In order to meet generally accepted standards we should have approximately 50,000 public health nurses to serve the population of the United States, as against the 11,000 now in the field. All public health authorities will probably agree that the need for nurses is the largest outstanding problem before the health administrator of the present day.



A PUBLIC HEALTH NURSE STARTING OFF TO VISIT A COUNTRY FAMILY IN DISTRESS

Often the public health nurse must render first aid. In some rural communities where physicians are scarce she is quite indispensable.

One of the more important functions of the public health nurse² is bedside nursing. The nurse calls at the home, daily or as often as needed, to give the necessary care, remaining only in emergencies. Her attention is not confined to the sick member of the family, but she endeavors to discover and remedy physical defects and habits as well as insanitary conditions. She gives various members of the family definite instruction regarding the prevention of disease and the development of sound health. This work, of course, requires prenatal nursing, including instruction in the hygiene of pregnancy. Although usually the visiting nurse, on account of her other duties, is unable to remain with maternity patients during confinement, she must be competent to do maternity nursing when necessary. The public health nurse, because of her intimate relationship to the home, is enabled to do much valuable work in advising mothers regarding the care of babies and children of pre-school age.

In the school, the public health nurse assists the medical inspector in the physical examination of children, visits parents to secure co-operation in remedying defects, investigates the sanitary conditions of school buildings, instructs the children through health talks and other means, assists teachers in the development of health education, and stimulates the interest both of teachers and mothers in the establishment of the hot school lunch.

In industrial hygiene, the nurse, as has been seen, has a part of considerable importance. There were at least 1778 nurses engaged in this work, January, 1923, on a full-time basis,³ as well as others doing industrial hygiene work in connection with a larger program of health work.

The public health nurse has a part of first importance in the maintenance of a successful dispensary. When employed by a venereal disease clinic, she endeavors to keep the patient under treatment until cured, to bring in to the clinic other members of the family who may be infected,

and to prevent the spread of the disease in the home. In her relation to other communicable diseases, she assists the health officer in their discovery and in the maintenance of

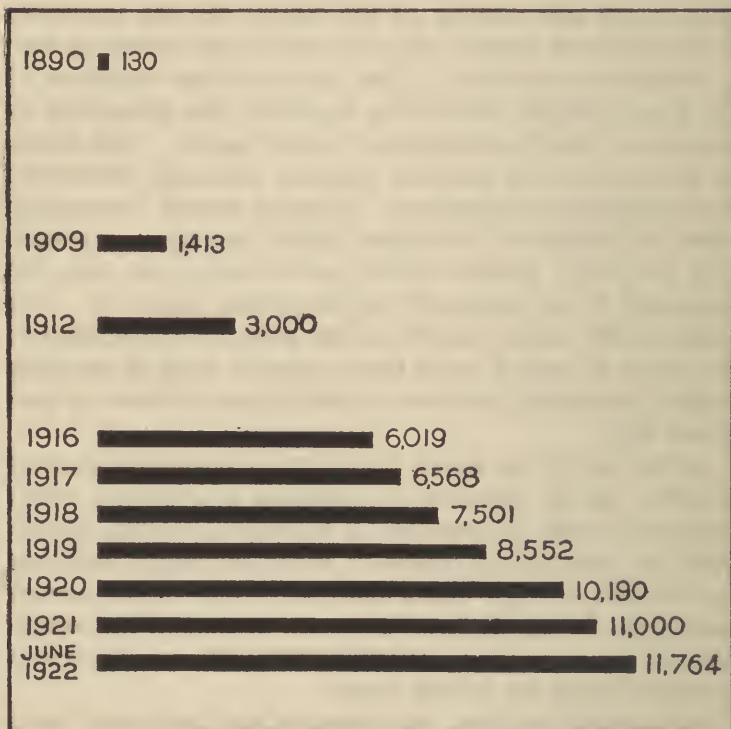


FIG. 63.—INCREASE IN THE NUMBER OF PUBLIC HEALTH NURSES IN THE UNITED STATES, 1890 TO 1922.

quarantine. She cares for patients, assisting with vaccinations, giving antitoxins and serums, and taking cultures.

When the public health nurse has a supervisory or administrative position in an association of nurses, she endeavors, through co-operation with health authorities and others, to bring about the establishment of prenatal,

maternity, infant welfare, child welfare, tuberculosis, and venereal disease clinics. She gives lectures, sets up exhibits, and organizes various kinds of health campaigns.

One nurse, if she has a large territory, of course cannot carry on all the lines of work mentioned. If wise, she confines herself to one or two activities, the choice being determined by the needs of the community, the desire of those she serves, and the possibilities of accomplishment.

There were in the United States at the time of the 1920 census 149,128 trained nurses,⁴ an increase of 83 per cent during the preceding decade.⁵ These have been graduated from about 1,700 to 1,800 accredited schools.⁶ Not all of these are registered nurses, and there are many who are not in active service. Only 41,419, at the beginning of 1923, were members of the American Nurses Association.⁶ Of those who are in active service, a large majority are doing private work. There are about 12,000 public health nurses; they are graduate nurses who have had special training in public health work, about 20 per cent of them having received their training in post-graduate schools.⁶ In 1890, there were only 130 public health nurses; in 1912, however, the number had reached 3,000; and in June, 1922, 11,764.* (See Figure 63.)⁷ As the report of the Committee on Nursing Education indicates, however, the supply is inadequate. At least 50,000 are needed.

Hospital Social Work.—Those who have become interested in disease and its prevention through the avenue of social work have found that many cases of poverty and dependency are due to sickness and that the cure and prevention of disease, in many instances, rests largely upon the improvement of social and economic conditions, especially in the home. Their experience has convinced them that medical social work is essential to the intelligent handling of social problems, and they have, therefore, included in their training various courses in community hygiene.

* See page 446 for number of public health nurses in each state.

The function of the hospital social worker is to assist in the cure and prevention of disease in individual cases by the following activities: ¹⁰

1. Discovering and reporting to the physician facts regarding the patient's personality or environment, which relate to his physical condition.
2. Overcoming obstacles to successful treatment such as may exist or arise in his home or his work.
3. Assisting the physician by arranging for supplementary care when required.
4. Educating the patient in regard to his physical condition in order that he may co-operate to the best advantage with the doctor's program for the cure of the illness or the promotion of health.

The hospital social worker should have a two years' course in a school of social work, where emphasis is placed upon principles and the technique of case work. Some medical knowledge should be acquired. While the nurse's training is desirable, it is not usually considered essential.

An important distinction between the public health nurse and the hospital social worker is that while the former's point of approach or contact is usually in the home, the hospital social worker gets her original contact in the hospital or dispensary. ¹¹

It has been virtually impossible to determine the number of women engaged in hospital social work. There are, however, approximately 1,200 members of the American Association of Hospital Social Workers, and the secretary of this organization writes that she does not believe "the number of workers is appreciably greater than this figure." There are, she reports, approximately 400 hospital social service departments. ⁸ Some of these women are connected with hospitals, especially their out-patient departments, and others with clinics. Of the more than 1,200 hospital social workers, a considerable number are nurses. This was true of 55 per cent of 350 salaried workers covered by a survey

conducted in 1920. Of a considerably smaller number of workers included in another study, it appeared that a little more than one third had spent a year or more in some school for social work.⁹

The Periodic Examination.—The average length of life in the registration area of the United States, 1920, was 56 years. While this figure is higher than that of some countries of the world, it is well below that of others. It does not allow man even his allotted “three score years and ten.” What is more important, a large proportion of men, especially those in their later years, are now living at a low

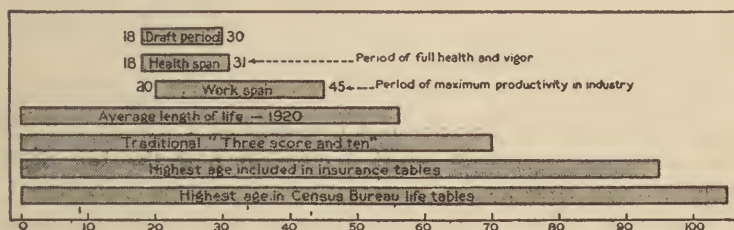


FIG. 64.—PERIOD OF LIFE DESIGNATED BY THE LIFE EXTENSION INSTITUTE AS THE “HEALTH SPAN” COMPARED WITH OTHER SPANS AND LENGTHS OF LIFE.

plane of health and efficiency. Though they may be “up and around,” they do not enjoy the fuller, more abundant life. The accompanying diagram (Figure 64) adapted from one prepared by the Life Extension Institute,¹² emphasizes the relatively short length of the period designated by the Institute as the “health-span,” the time of “vigorous, exuberant health and physical freedom . . . when the average healthy individual can tackle anything in the way of sport or work, confident of his physical reserves.”

Illnesses in childhood, unfavorable conditions in industry, lack of personal hygiene (including proper nutrition),

focal and other infections have made the degenerative diseases of middle life and old age responsible for a vast amount of disability and premature death. One may appear to be "suddenly taken sick," but in reality it is often not sudden at all. For days, weeks, or months some organ has been giving way, and finally, no longer able to stand the strain, it refuses properly to act. Physical collapse, whether apparently abrupt or spread over a period of many years, is not the result of inflexible law, says Eugene L. Fisk, but the result of the cumulative effect of infection, faulty nutrition, and similar influences. Pathological conditions are not "normal" at any time of life, though at present certain such conditions may be *common* to particular times of life. "The body," he says, "does not simply wear out. It is infected out, poisoned out, starved out, or deficiencied out."¹³

The periodic health examination, particularly for adults, has been advocated by various agencies as a means for the prevention of the degenerative diseases and the lengthening of life. The Life Extension Institute has been active in the inauguration and promotion of the movement. It has on its staff about 8,000 examiners, most of them in the United States. Just as no modern industry can succeed without a periodic examination of stock and machinery, and just as no wise automobile owner runs his car continuously without an overhauling, so the human body, say the promoters of this movement, must be periodically inspected.

The need for such examinations was clearly shown when the United States entered the World War. Three and one half million men between the ages of eighteen and thirty, it will be remembered, were examined to determine whether they were fit for military service; 47 per cent were found to be defective and 21 out of every hundred were rejected and sent home. In Chapter IV the results of other inspections by the Life Extension Institute and industrial establishments were given, also the results of examinations of children.

Results which have followed the systematic examination of groups of persons have strongly borne out the claims of the proponents of the movement. An investigation of the records of life insurance policy holders having *advanced impairments* and receiving the periodic examination and the health service of the Life Extension Institute during 1914-15 showed that, while the expected mortality for such persons was two and one half times the mortality for those classified as preferred risks (with slight impairments only), the actual mortality for this group was cut as a result of the periodic examination and health service, to 82 per cent of the expected mortality for preferred risks.¹⁴

In Framingham, Massachusetts, the mortality rate for tuberculosis (corrected for residence and certification errors) in the decade prior to 1917 averaged 120 per 100,000. In the year 1921, it was only 40. In the opinion of Dr. Lee K. Frankel, of the Metropolitan Life Insurance Company, this improvement was due largely to the fact that nearly two thirds of the population had been physically examined.¹⁵

There appears to be no question regarding the advisability of the periodic examination; the problem lies in developing a mode of procedure. Will the periodic health inventory become the function of industry? Will the constituted health authorities, through dispensaries and health centers, provide opportunities at rates within the reach of all persons for such examinations, or will the examination be left to individual initiative? ¹⁶

Eugene Lyman Fisk, of the Life Extension Institute, suggests that periodic inspections may be brought about in five ways: (1) through the training of medical school students to make such examinations; (2) through popular education regarding their value; (3) through the periodic health examination of policy holders by life insurance companies, as a free privilege to be accepted voluntarily (in 1920, through companies employing the Life Extension

Institute alone, more than 1,000,000 persons were entitled to this privilege); (4) through the periodic physical examination in industry; and (5) through the establishment of "a national department of health to co-ordinate all activities for physical education of school children and related measures." ¹⁷

The House of Delegates of the American Medical Association passed in June, 1922, the following resolution ¹⁸ presented by the Council on Health and Public Instruction:

Whereas the need and value of periodic medical examination of persons supposedly in health are increasingly appreciated by the public, it is recommended by the Council on Health and Public Instruction that the House of Delegates authorize the Council to prepare suitable forms for such examinations and to publish them in the Journal of the American Medical Association; and that the county medical societies be encouraged to make public declaration that their members are prepared and ready to conduct such examinations, it being understood that the indigent only shall be examined free of charge and that all others are expected to pay for such examinations.

In accordance with this resolution, the American Medical Association has issued a standard form for the use of physicians in giving periodic examinations. The National Health Council, as already noted, is co-operating with the Association in a publicity campaign for the promotion of the periodic examination.

Only in a few localities, apparently, at the beginning of 1923 were pay dispensaries, or those offering free service, available for the periodic examination. At that time the largest number of persons, probably, were being reached through health service in industry.

Popular Health Education.—So little clear thinking has been done in the general field of education in respect to health that there was still at the end of 1922 widespread confusion regarding the use of the term, "public health education." It was being used by some sanitarians to refer to the

health instruction of children in schools; by others to mean the teaching of men and women to become health officers and nurses; by one group to refer to the training of actual and prospective school-teachers to teach health habits and to give health information; the term was also being used to include publicity work, as well as popular health education.

To prevent this confusion, a series of terms is proposed to make possible a clear-cut differentiation. The terms¹⁹ suggested are as follows:

Health training or health instruction—the teaching of health habits to children in school and the imparting of health information.

Public health education (a term comparable to “medical education”)—the teaching of men and women to become health officers, nurses, and other kinds of sanitarians.

Health education—teaching present and prospective school teachers how to teach health habits and how to give health information.

Publicity work—“selling public health to the people,” so that they will give moral and financial support to public health agencies and public health work.

Popular health education—giving to the general, non-school-attending public, information regarding disease and hygiene, and influencing their behavior so that they will avoid disease and not expose other persons to infections.

The last named type of work, “popular health education,” is now to be considered.

It is roughly estimated that 80 per cent of the maladies which now produce the total death rate, says George E. Vincent,²⁰ cannot be directly controlled by health agencies. Their control, he believes, depends upon the ability of sanitarians to persuade individuals to practice personal hygiene and report promptly early indications of disorders. Because those diseases whose control and elimination depend largely upon hygienic living are decreasing but little, it is a matter of prime importance that measures be taken to educate the people in the practice of individual hygiene. The speaker

of the House of Delegates of the American Medical Association, F. C. Warnshuis, in his address ²¹ at the 1922 meeting of the Association said: "The public is twenty-five years behind the times in its information in regard to the scientific physician and his work to-day. For this we are largely and solely culpable . . . I believe that no more epoch-making action can be taken by this House during this session, than to adopt a plan of activity that will undertake the education of the public and acquaint it with the established tenets of scientific medicine and the methods utilized by physicians in the prevention, eradication, and treatment of human ills. This educational work must be based on the proposition that, in a democracy, health is a public concern." Furthermore, the combating of quackery and the use of nostrums is largely an educational task. A committee of the American Public Health Association ²² recommends the education of the public regarding nostrums. Facts on this subject already set forth show how greatly material of this kind is needed.

It is generally agreed that popular health education, aimed at the development of personal hygiene among individuals, must have a far more important part in public health programs in the future than in the past. The facts regarding disease and its prevention must be disseminated, and motivating influences must be provided which will lead to the actual practice of personal hygiene and to the periodic medical examination for the detection of disease in its early stages.

The United States Public Health Service conducted a preliminary questionnaire on the subject of popular health education in 1922, and received statements from 10 sanitarians and 21 psychologists.²³ There was general agreement that thus far "hit or miss" methods have been used. "Much money has been wasted in the past," said one prominent city health officer, "in so-called public health educational work." Of the ten sanitarians who replied, eight expressed a belief that public health education needs

a basic science, and seven of them indicated, in one way or another, that that basic science should be psychology. Among these were Ennion G. Williams, Allan J. McLaughlin, Donald B. Armstrong, Henry F. Vaughan, and S. W. Welch. A few, but only a few, clear, definite statements were offered regarding the principles to be utilized in the development of popular health education. The two following are helpfully suggestive:

Certainly one important thing is to remember that individuals are moved largely by emotions and not ideas; that we must know the instincts and desires that may be influenced, and direct our appeals to them.

It may be important to avoid an imitation of ordinary commercial advertising methods. The best commercial advertising is placed in "first-class" magazines and aims at the middle class with education enough to enjoy the magazines and money enough to buy the things advertised therein. This does not reach the great mass to whom even the *Saturday Evening Post* is high-brow. Much of our educational effort goes over the heads of the mass because it follows commercial standards.

All the principles of "appeal" and "response" have a bearing, but in advertising the appeal is largely a "selfish" one—that is, the prospective purchaser must be persuaded that the purchase will be to his own personal advantage. In public health work the individual is asked to *sacrifice* apparent personal advantages for the general good or to forego immediate pleasure for a more remote advantage. The problem is, therefore, radically different from those of either education or advertising. Their principal contribution is in their *method* of studying the problems and of applying fundamental psychological principles.

It is significant that each of the sanitarians expressing his opinion believes some kind of psychology is needed to develop in a more scientific manner the work of popular health education. The facts are sufficiently determined, says one of them, "the problem is one of 'putting across' propaganda." In a symposium of addresses before the American Public Health Association on "The Next Step for Health

Departments," Eugene R. Kelly, W. S. Rankin, and Ennion Williams, leading state health officers, all emphasized the growing importance of popular health education.²⁴ The most important "next step" before health administrators, educators, and voluntary organizations alike, Doctor Kelley believes, is the "diffusion of already well-demonstrated hygienic knowledge in a form easily assimilable by the great mass of our fellow citizens. . . . We must transmit this knowledge along lines and by methods that will be so psychologically convincing and compelling that our fellow citizens will follow the principles of personal hygiene by habit. . . . It is a much more intricate problem of sociology and mass psychology, as applied to health work, to save ten infant lives by well-known methods of prenatal, natal, postnatal teaching and care, than it is to save ten lives by the installation of a safe municipal water supply."

Although it would be generally agreed that most persons do not apply in their daily living the information regarding disease and health which they have acquired, the problem of developing for the great mass of human beings *motives* which will lead to the practice of personal hygiene is one which has not been frankly faced and clearly discussed. Soldiers will adopt a program of hygienic living in order to become efficient fighters. The athlete practices personal hygiene to keep fit for one or more particular sports. Some women will conscientiously follow a prescribed diet to reduce weight, with the aim of achieving physical attractiveness and beauty. But these motives do not apply to the majority. Clear-cut aims, if possible, should be formulated for all. What motives will be effective no one seems able to say. Jesse F. Williams believes an ideal of social responsibility may be established. "Each individual is responsible for the preservation of the quality of life received from ancestral stock," he says, "and, with other members of society, for the preservation of the social environment conducive to health and happiness." "For some," he continues, "an



AN OFFICER OF THE OREGON STATE BOARD OF HEALTH ADDRESSING
MEN IN CAR SHOPS

ideal of responsibility to society smacks of all that is destructive of happiness as they know it. These foolish ones think of happiness in terms of dance halls, horse races and lobster palaces . . . Though they travel over the earth to find happiness they will miss it unless they carry it with them in their hearts . . . But for both youth and old age an ideal of social responsibility may have real meaning . . . Both may become interested in passing on an inheritance, biologic or social, that shall be a fulfillment of trusteeship. To bequeath to immediate or distant offspring biologic and social jewels is incomparably superior to the oft valued bequest of battered silver spoons, pewter plates or old clocks." ²⁵

It is probably true that much of the success in the warfare against tuberculosis, venereal disease, and infant mortality has been due to popular health education. It is generally agreed that future progress also in the combating of many diseases will depend upon the effectiveness of education; private and official health agencies already are planning to spend large sums in its development. Nevertheless, it is doubtless true that money spent on this work has been inefficiently used, and that popular health education is still being conducted in a "hit or miss" manner. No scientific principles or laws applying to the reactions of human beings to various kinds of stimuli and to the preparation of materials for bringing about desired responses have been formulated. An edition of a hundred thousand or a million pamphlets may be issued without adequate data regarding the relative values of various sizes of type, effectiveness of different kinds of appeal, and ability of readers to understand various grades of vocabulary. Systematic work in public health education awaits the development of psychological research in this field.

In the meantime the distribution of pamphlets and the utilization of other measures by no means should be discontinued. More materials are needed than are now available.

Fortunately, the publication of several popular magazines, which are reliable, has been inaugurated during recent years.* The fact that in 1921 the Metropolitan Life Insurance Company considered it good business to distribute 25,000,000 attractive bulletins and pamphlets in great variety²⁶ tends to indicate that their preparation and distribution constitutes a good investment. It is interesting to observe that during a similar period the United States Public Health Service distributed only 1,201,981 publications,²⁷ including both its pamphlets for popular use and its scientific reprints. It is probable that the number of pamphlets distributed by nostrum manufacturers is closer to the number put out by the Metropolitan Life Insurance Company than to those issued by the Public Health Service. The report of the Surgeon General for 1922 states that "the Service has received many requests for the loan of exhibit material, posters, and motion pictures, but compliance with most of these has been impossible because of the lack of funds."²⁸

Popular health education is being looked to for a larger part in the work of disease prevention and health promotion. Its effectiveness will depend both on the development of research and on the appropriation for the use of various health agencies of adequate funds.

* See page 483.

PART VI

THE EXPANDING FIELD OF PUBLIC HEALTH

A well-behaved mind grows only in a well-treated body; it is true that farseeing hygiene can prevent more crime than any law.

—MÜNSTERBERG.

*This the true sign of ruin to a race—
It undertakes to march, and day by day
Drowzes in camp, or, with the laggard's pace,
Walks sentry o'er possessions that decay;
Destined, with sensible waste, to fleet away;—
For the first secret of continued power
Is the continued conquest;—all our sway
Hath surety in the uses of the hour;
If that we waste, in vain walled town and lofty
tower!*

—WILLIAM GILMORE SIMMS.

Now the sole hope that the future may be better than the past or present centers around the possibility of substituting for that bankrupt ideal [maximum production of wealth to the square mile] the ideal of the maximum production of health and happiness.

—JOHN GALSWORTHY.

CHAPTER XVII

ECONOMIC AND SOCIOLOGICAL ASPECTS OF PUBLIC HEALTH*

THE Italian third helper at No. 4 furnace at the steel mills was talking with a fellow worker.

"What do you think of this job?" he asked.

"Pretty bad," said the other, "but pretty good money."

He looked up and the swollen veins showed on his forehead. His eyes showed the effects of his twenty hours of continuous labor.

"To hell with the money!" he said with quiet passion. "No can live." ¹

A worker is fortunate to earn "pretty good money"; adequate income, as will shortly be seen, is essential to health. But the simple provision of good wages is not sufficient for the maintenance of physical and mental health. Long confinement to monotonous tasks, the repressions of industrialism, and other conditions of modern life enter into the problem. For all human beings are striving for the kind of health that comes with the fuller, freer, more buoyant life. Men will endure the hardships incident to a long strike in order to win a higher wage; and yet it is "to hell with the money" when they realize that the fuller, healthful life requires more than money. In this chapter, not only the relation of income to health will be discussed, but also various broader social aspects of the subject.

Poverty.—It has already been suggested that ill health

* The economic cost of disease is dealt with in Chapter V and other economic aspects of public health in Chapter XX.

is due partially to poverty, that there is possibly more tuberculosis among the poor than among the well-to-do, and virtually no pellagra except among the poor. Statements regarding the relation of disease to poverty, however, must be made guardedly because of other influences, such as heredity, tradition and climate, which enter into most health situations.

Ill health is sometimes due to poverty; furthermore, poverty is often due to ill health. Between 25 and 40 per cent of persons applying to charitable organizations are temporarily or permanently disabled on account of sickness.² One third of all the funds expended for relief during the year 1921 by the Association for Improving the Condition of the Poor of New York (one of the largest charitable organizations in the United States) went to families in which there was tuberculosis. More than half their funds were expended for families in which the death of the breadwinner had occurred, and 40 per cent of these breadwinners died from tuberculosis.³

Income.—What are the facts regarding the annual income of the workers of the United States, and what is the minimum income which will permit a family of five to maintain a healthful and decent living? In 1918 (the year for which the most reliable data are available) approximately 86 per cent of all persons gainfully employed received incomes of less than \$2,000 per year.⁴ This means that the incomes of a very large number of families having only one wage earner were much below this amount. Yet a careful study made in August, 1919, by the Federal Bureau of Labor Statistics at Washington showed that to maintain a family of five “at a level of health and decency” an annual income of \$2015 was necessary.⁵ The budget level used in this study was intended to be a “bottom level of health and decency below which a family cannot go without danger of physical and moral deterioration”; it does not provide many comforts which should be included in a proper

"American standard of living"; no provision is made for savings other than insurance, nor for vacations, books or other means of education. Although it is true that the cost of living in 1919 was probably higher than in 1918, and although prices may have been higher in Washington than in other cities, other studies show similar results. Thus an investigation made in Philadelphia by the local Bureau of Municipal Research⁶ showed that a "fair standard of living," required in the fall of 1918 an income of \$1637;* another⁷ made in December, 1919, indicated that \$2144 was necessary to maintain in Uniontown, Pennsylvania, and Pana, Illinois, a "health and decency level" of living for a family of five; and an investigation in East Harlem, New York City, November, 1920, showed that such a standard, required an annual income of \$2632.⁸

Apparently, children in a standard American family of five cannot have nutritious food, sufficient clothing, and at the same time necessary medical attention, if the father receives an income much less than \$2,000 per year—unless, of course, his wages are supplemented by the labor of the mother and one or two of the children.

An examination of over 1,000 male garment workers in the United States showed marked differences between the physical condition of those with relatively high incomes and those with low incomes. The results are summarized in a table⁹ showing the proportion of men in 3 wage groups who are "poorly nourished," "anemic" and tuberculous." Workers with hemoglobin percentages under 80 (Talquist scale) are classed as "anemic." (Note also that wages listed were paid prior to 1916.) The table follows:

* Some persons would consider even this inadequate: A similar budget (of \$1,803 at Nov., 1919, prices) provides only \$674 for food for a year for five persons, only one \$20 suit and one pair of gloves at 75 cents for the husband; it allows the wife only \$3.50 for hats, and the 10-year-old daughter only \$3.50 (per year) for coats.

<i>Annual Earnings</i>	<i>Total Number</i>	PER CENT		
		<i>Poorly Nourished</i>	<i>Anemic</i>	<i>Tuber- culous</i>
Under \$500	372	25.00	9.94	5.64
\$500-\$699	566	15.02	5.65	5.30
\$700 and over.....	456	12.72	4.42	.44

Workmen's compensation, minimum wage laws, and sickness insurance are measures which at least ameliorate conditions, but these remedies are often inadequate or slow in coming, and sometimes the workers use the strike in an effort to hasten results. An enlightened public sentiment will be influential in bringing about improved conditions, and the sanitarian can be especially helpful by throwing the weight of his authoritative knowledge in favor of a wage which will permit healthful living.

Conditions of Labor.—In addition to an adequate wage, sanitary conditions within the factory, or other place of labor, are necessary to the health of the workers. There should be proper light and ventilation, devices for guarding the workers against dust and industrial poisons, also protection against fatigue. Extremes of temperature must be avoided, and excessive strains. In some hazardous occupations there should be provision for a change of clothing and for bathing, and for a place to eat, free from dangerous dusts and distracting noises. In the outdoor industries of the South, protection must be afforded against hookworms. Industrial hygiene measures, as will be seen, are required to some extent by law; they are provided voluntarily, as has just been observed, in the health programs of many progressive industries.

Few important sanitary surveys of industries have been made in recent years, but about 1914 several investigations showed bad conditions in many industries. Thus the report of the New York Factory Investigating Committee stated that, while many establishments were found which exercised proper care over the health of their employees, "unfortu-

nately such model establishments and such enlightened employers are in the minority," and "investigations in a great number of factories throughout the state have revealed much that is deplorable."¹⁰ A sanitary survey of the state of Louisiana showed that over 50 per cent of all establishments were in "poor" or "bad" condition;¹¹ and a similar investigation in Ohio reported by Hayhurst revealed many health hazards.¹² The following table gives a list of these dangers among Ohio industries, with the percentage of establishments where the exposure to hazards was found to be "bad":

<i>Specific health hazard</i>	<i>Per cent of work places where exposure to health hazard was found to be "bad"</i>
Dust	16
Dirt	21
Dampness	1
Darkness	10
Air	18
Heat	4
Cold	2
Infections (communicable diseases).....	41
Poisons	19

It is now generally conceded that at least one day's rest in seven is necessary to continued health, and in most industries an eight-hour day has been established. There are those who believe a six-hour day will promote greater health and efficiency. But in at least one company of the steel industry, many workers were, in 1922, still subject to the twelve-hour day and seven-day week. Regularity of employment is important; unemployment tends to produce worry and ill health and, by reducing the income, definitely makes proper nutrition more difficult.

Child Labor.¹³—The census for 1920 shows a decrease of 929,367 child laborers during the preceding ten-year

period. This appears to be a remarkable and gratifying reduction, but there were still in 1920, according to the census report, 1,060,858 child laborers between ten and fifteen years of age, including children engaged in part-time occupations and attending school,* and there were many thousands under ten which the census did not enumerate. The reduction, says the Census Bureau, was due partially to the fact that the 1920 census was taken in January, when there are usually fewer children on farms than in April, the time the 1910 census was taken. Furthermore, in May, 1922, the United States Supreme Court declared unconstitutional the federal child labor tax law which had been in operation three years. The provisions of this law affected 300,000 boys and girls, a part of whom may later be turned back into industry as a result of this decision.

The period of growth in the individual's life is especially important from the health point of view. Impairment of the heart and lungs during these years and interference with proper nourishment and rest may result in lasting injuries. Yet children as young as five have been found in Oklahoma regularly at work in the cotton fields during the picking season, while the average attendance in the schools was only 50 per cent of the enrollment. Employment of children for short seasonal occupations is not necessarily harmful, but too often excessively long hours are required. Out of 1,500 children fourteen and fifteen years old examined by physicians in twelve industries in Baltimore, 100 were found to have diseases or serious defects directly traceable to their occupation.

About three fourths of all children who have reached the age of sixteen are employed, most of them beginning work during early adolescence, when crucial changes are taking place in the physiological and psychological processes, which often make heavy demands upon the vitality. It is

* See Appendix 3 (page 443) for percentage of children engaged in gainful occupations, by states.

LEGEND

- Examination mandatory
- Issuing officer has power to require examination
- No provision

The map shows the following states categorized by their examination requirements:

- Examination mandatory (white):** CAL, ARIZ, N. MEX, TEX, OKLA, KANS, NEBR, NEB, WYO, S. DAK, N. DAK, MINN, IOWA, MO, MISS, LA, ALA, GA, FLA, KY, OHIO, PA, N. Y., N. H., V. T., R. I., C. T., D. C., M. D., VA, W. VA, N. C., S. C., and N. J.
- Issuing officer has power to require examination (diagonal lines):** WASH, OREG, IDAH, MONT, NEV, UTAH, SOLO, ARK, TENN, and WIS.
- No provision (solid black):** WYOMING, NEV, and N. J.

The Indiana law permits exemptions in certain cases on written objection of parent.

The North Carolina law does not specifically demand an employment certificate, but if obtained it is prima facie evidence that child is of legal age for employment. Examination in North Carolina within one year previous by school medical officer may be accepted as substitute.

tion in gainful occupations, overwork, and bad food. In Fall River, Massachusetts, the tuberculosis death rate is considerably higher among boy and girl cotton mill operatives fifteen to nineteen years of age than among those of the same age who are not employed in the cotton mills.¹⁴

Only 22 states in 1922 required a physician's certificate of physical fitness as a prerequisite to the issuance of a

work permit; one state (Virginia) required follow-up examinations of children who go to work. The map on the preceding page (Figure 65) shows the standings of the various states in regard to the protection they afford to children in industry.¹⁵

The Children's Bureau issued in 1921 recommendations made by a committee of medical scientists appointed by the Bureau.¹⁶ In view of the conditions revealed by the examinations of drafted men at the time of the World War, these conclusions are of particular significance. Only the following excerpts, however, can be given here:

1. The minimum age for entrance of children into industry should not be younger than sixteen years. Since it is recognized that the physiological and psychological readjustments incident to pubescence (which in the vast majority of cases are not completed until the sixteenth year) determine a period of general instability which makes great and special demands upon the vitality of the child, it is of paramount importance that he should be protected during this period from the physical and nervous strain which entrance into industry inevitably entails. The committee recognizes the fact that pubescence may occur early or may be greatly delayed, and is the indication of a physical stage during which it is highly inappropriate to subject the child to the strains of industry.

3. The physical fitness of children entering industry should be determined by means of a thorough physical examination conducted by a public medical officer appointed for this purpose. Where possible all examinations should be made without clothing. Before such a physical examination is made the child should present a definite promise of employment in writing from his intended employer, stating the specific occupation at which he is to be employed.

5. All employed children up to the age of eighteen should have at least one yearly physical examination, to be made by a public medical officer appointed for this purpose. Whenever in the judgment of the medical examiner more frequent examinations are desirable, the child should be ordered to report at stated intervals for this purpose. These examinations should take place in the certificate issuing office, in the continuation school, or in the establishment in which the child is employed.

7. Many of the physical defects found in children applying for work permits could easily have been discovered and cured, or prevented altogether, by proper examination and treatment during the child's school life, or even earlier. The committee therefore urges the necessity for the provision of adequate facilities for medical examination and treatment of all children of school and pre-school age.

In the opinion of the committee, certificates should be refused to all children who have the following defects: cardiac disease, with broken compensation; pulmonary tuberculosis, or other evidence of serious pulmonary disease; active glandular tuberculosis; active tuberculosis or syphilitic disease of joints or bones; total blindness (unless no further educational facilities can be provided for such children); trachoma; chorea; syphilides; hyperthyroidism; acute or subacute nephritis; hookworm disease. Certificates should be refused all children pending correction of all serious remedial defects, such as: defective vision (subject to correction by glasses), defective teeth, diseased tonsils, and orthopedic defects.

Employment of Women.—The employment of women is due to economic necessity, also to modern ideals for which the feminist movement is responsible. In some cases women work because they are widowed, and thus have become the chief support of the family, or because it seems necessary for the wife to supplement through her labor the income of the husband. In 1920, there were in the United States, 8,549,511 women engaged in gainful occupations, including part-time positions.¹⁷

A survey made in 1919 of 780 occupations in 28 industries of 43 states shows that the *average* wage of 85,000 females was 30 cents per hour, or slightly over \$700 per year, no deductions being made for unemployment and vacations. After a woman has become widowed and the sole support of a family of children, she cannot, of course, keep them in a healthful condition with such an income, unless

aid is received from outside the family; and yet, of these 85,000 female workers, over 13,000 were receiving less than 20 cents an hour.¹⁸

Physiologically, women are not capable of the same work as men, especially at childbearing periods, and several investigations show that infant mortality is shockingly high among babies whose mothers work in factories.¹⁹ Neither does it seem possible for many women to work without ill effects during the monthly menstrual period. A study of the mortality rates among 20,000 cotton mill operatives in Fall River, Massachusetts, in 1905-7, showed that the female death rate was considerably higher than the rate among males in the same industry. For instance, in the 30 to 35 age group, it was 11.3 per thousand, while for males in the same age group, it was only 8.7.²⁰

Provision for the protection of women in industry is less adequate in the United States than in other great industrial countries. In 1906, all the countries of Europe, except four small nations, signed the "Berne International Convention" prohibiting night work for women, but in 1922, only nine of the forty-eight states in this country had passed similar laws. Massachusetts, New York, Missouri, Connecticut, Washington,²¹ and Vermont have legislation prohibiting the employment of women immediately before and immediately after childbirth, but only these six states; and only Pennsylvania and New York prohibit the employment of women in dangerous lead industries. Louis D. Brandeis, before he became a Justice of the United States Supreme Court, successfully defended the constitutionality of the Oregon law limiting the hours of labor for women. He showed that the welfare of the community necessitates the health of mothers, and that the protection of their health requires legal restrictions in the work of all women.

The health of those who do housework in the home has been sadly neglected. A woman can not become unduly

fatigued in housework any more than in factory work without injury to her health. Cooks are often exposed to excessive heat and sudden changes of temperature, and domestic servants, says Rosenau, compose an unduly large proportion of patients at hospitals and clinics.²²

The Feminist Movement.—The development of the feminist movement has brought about various changes which influence the health of the women of the nation. It appears to have freed women from much unhygienic wearing apparel, such as the long train, hoop skirt, and tight-fitting corset, and to have brought about a more general participation in athletics and outdoor recreation. Feminism has led an increased number of women into medicine, public health nursing, and hospital social work. It has resulted in the active participation of a large number of club women in various forms of social work related to the health of the people, including the development of a maternity and infancy health program and a program of social hygiene measures, also the advocacy of legislative measures prohibiting child labor and providing better conditions in industry. It would generally be conceded that the feminist movement was partly responsible for prohibition. It has given impetus also to the birth control campaign. A more careful consideration of the influence of the feminist movement upon the health of women may be found in a study of sociology; lack of space prevents further discussion in this brief outline.

Sickness and Accident Insurance.—When accident or disease strikes down a wage earner, who under normal conditions has barely been able to support his family in health and decency, he is not able to provide medical attention for himself and food for his family without going in debt and mortgaging the future—unless there is some aid available from outside the family. Because industry is responsible for many accidents and diseases among its workers, it seems reasonable that it provide, in such situations, some kind of compensation. A good many workers take advantage of

insurance offered by commercial agencies and benefit associations; but, in many instances, they do not from lack of foresight, or cannot because of low wages. Social insurance, however, tends to distribute the expense due to industrial disability, so that the industry and the more fortunate workers who are not incapacitated help bear the burdens of the unfortunate. Three forms of sickness and accident insurance will be briefly outlined: (1) insurance provided by workmen's compensation laws, (2) insurance provided by commercial organizations and benefit associations, and (3) compulsory health insurance.

*Workmen's Compensation Laws.*²³—The payment of compensation to the sick or injured worker is based on the theory that the industry (and eventually the consumer, of course), should bear all costs of production of economic goods, including the expense of death, accident, and sickness occurring in the regular course of production. Compensation laws were enacted by 42 states and the federal government between 1911 and 1919. The Massachusetts law provided for the payment of compensation for disabilities due to industrial diseases, as "personal injuries"; by 1920, the laws of California, Connecticut, New York, and Wisconsin had been amended to include similar provisions and by the end of 1922 there were twelve such laws.²¹

In most states the law provides primarily for compensation on account of accident. The vast majority of accidents result in total temporary disability; and the best American laws provide for the payment during the entire period of disability of two thirds of the injured employee's regular wage. In many states, however, the provisions are far less liberal. "Our compensation laws are based upon the idea of merely keeping the injured and his family from starvation," write Commons and Andrews, "rather than upon the principle of replacing the wage loss."

The laws of most states require the payment of money for medical care during disability, though the majority impose

limits on the amount paid and on the time during which medical care is furnished. These limits run from \$50 to \$600 and from 2 to 12 weeks. An increasing number of states, however, are giving their administrative boards discretion to increase these limits. Providing funds for medical care tends to reduce the period of disability and to diminish the number of complications, thus reducing also the amount of compensation. Of 721 infections during a two-year period in Wisconsin, resulting in the loss of 12,500 working days and necessitating the payment of \$40,000 in compensation, approximately 600 were the result of small scratches and breaks in the skin. Prompt attention to minor accidents, encouraged presumably by legal provision for medical care, helps prevent such loss of time and money.

An increasing number of industries are realizing that medical service in the plant is profitable. Where it is provided, it is not necessary for the industry to make cash payments to the worker for private medical service. Of a total of \$18,500,000 paid during 1919 to sick and injured workmen in New York State, where there are large numbers of establishments without medical service, approximately \$3,750,000 (about 20 per cent) was paid for medical aid.

Measures for the rehabilitation of industrial cripples had been provided by 1922 in the laws of 36 states.²¹

The extension of medical service in industry will tend to prevent the making of cripples and to reduce the large proportion of defective adults such as were discovered at the time of the draft examinations. It will be remembered that, at that time, 23 per cent of rejections were due to mechanical defects.

In most states the workmen's compensation act is administered by an official board and the full amount of compensation is paid by the industry. In many instances, the industry protects itself by covering its liability by some form of insurance.

Several groups of workers are excluded from the benefits

of American state compensation laws—those engaged in supposedly non-hazardous occupations, casual laborers, and others. According to a statement published by the U. S. Bureau of Labor Statistics at the end of 1917 (when compensation laws were in force in 40 states and territories), 8,500,000 wage earners, or nearly 40 per cent of those living in this area, could “not possibly be covered under any existing compensation act.”

*Commercial and Private Insurance Organizations.*²⁴—Industrial health insurance companies, casualty companies doing sickness insurance business, fraternal societies, and sick benefit funds conducted both by industrial establishments and trade unions have undertaken to provide health insurance for wage earners, but no statistics are available to make possible a satisfactory estimate of the number of wage earners thus insured.

An official commission in Illinois, studying the economic condition of 3,000 families, found that over one fifth of all wage earners lost wages on account of sickness, but that only 13.4 per cent of those sick had received insurance payments. Wage earners were almost always either uninsured or inadequately insured, and those who most needed insurance (because most often sick) and who were poorest and nearest dependency were insured both less often and least adequately.²⁵

In most cases, the cash benefit is small and wholly inadequate to meet the unusual expenses caused by illness. The Illinois commission found that out of the whole sum of wages lost by 4,744 wage earners through sickness during an entire year, only 5.9 per cent was covered by insurance. The insurance of the higher paid wage earners was less than one half of their wages, and the benefits awarded to the lower paid workers were wholly inadequate, although they, of course, needed a relatively larger proportion.²⁶

Apparently in the large majority of instances, medical service is not provided. Apparently, also, the cost of health

insurance is extremely high, considering the benefits offered. Out of \$472,000 paid by policy holders in certain commercial mutual benefit associations in the District of Columbia in 1914, only \$179,000 was returned to policy holders in the form of benefits.²⁴

Compulsory Health Insurance.—From 1915 to 1919 compulsory state health insurance was extensively discussed in the United States. In general, the plan proposed provides for the payment of cash benefits during sickness or disability, for medical and surgical treatment, for nursing service, and for hospital care and dental treatment. In some instances maternity benefits are provided for working women and for the wives of male wage earners, also a limited burial benefit. These payments are made out of a fund to which the employer, employee, and the state contribute according to approximately the following proportions: 50 per cent by the employees, 40 per cent by the employers and 10 per cent by the state. Provision is made for an administrative board to be composed of representatives from these three groups. The plan also provides that a representative of the state board of health pass upon all claims for compensation.

A bill providing for compulsory health insurance was introduced during 1917 or earlier in fifteen state legislatures, including those of Massachusetts, New York, and New Jersey. Eight of them appointed commissions to investigate the subject. In Massachusetts and California two successive commissions were named, making in all ten official bodies which made surveys, held hearings, and issued reports. In Massachusetts the first commission reported favorably upon the proposed bill and the second commission adversely. In California both commissions reported favorably, but a referendum to amend the state constitution to permit the establishment of compulsory health insurance was defeated by a vote of 358,324 to 138,858. The New Jersey and Ohio commissions recommended the adoption of the bill, but the commissions of Connecticut, Wisconsin, and Illinois

reported against it. Up to the end of 1922 no compulsory insurance bill had been passed by any of the states.²⁷

Compulsory health insurance is opposed by commercial insurance companies, by employers who object to a closer supervision of industry by the state, by the American Medical Association, also by some groups of organized labor, which fear the development of a paternalistic government. There apparently was little interest in this form of social insurance in 1923, possibly because the attention of its most active proponents was absorbed by other problems in the field of labor legislation.

One writer, in a book published in 1922, advocates the separation of financial relief and medical relief, and endorses the "New York plan," which makes provision for such separation. Two bills introduced into the New York legislature provide for its adoption—a sickness insurance bill, passed by the Senate in 1919 but defeated by the Assembly, and a health center bill, passed by the legislature in 1923.²⁸ *

Miscellaneous Forms of Health Legislation.²⁹—The introduction of the phosphorus match in 1827 was followed eleven years later by the discovery of a disease known as "phossy jaw" or phosphorus necrosis. As early as 1874 Finland and Denmark had forbidden the use, in match factories, of white phosphorus which caused the disease, but no action was taken in the United States for many years. Match manufacturers, representing 95 per cent of the total production of this country, explained to Congress that they could not substitute a slightly more expensive but harmless compound without a law compelling all manufacturers to stop using the cheaper and poisonous material. The other manufacturers, representing the remaining 5 per cent of the product, said that they would close their factories before submitting to this sanitary measure. There were years of agitation. Then Congress, in 1912, placed a prohibitory tax on matches containing white phosphorus.

* See page 233.

One hundred and fifty years ago the work of the world was done chiefly on the farm and in the home. Each man controlled the conditions under which he worked. Then came the industrial revolution, and men were brought close together in shop and factory and exposed to the dangers of machinery, chemicals, electricity, compressed air, dust, humidity, high temperature, excessive hours of labor, and monotony. Man's environment became much more hazardous to health, and, what was more important, as an individual he had no control over it. Legislation was essential to protect the worker from "phossy jaw," and even earlier it was utilized for his protection against other industrial hazards.

The reporting of communicable diseases has been required by law or regulations since the early days of public health work; the first law requiring the reporting of industrial diseases was passed in 1911 by California. During the next five years, 16 states enacted similar legislation. The earliest of these laws required the reporting of anthrax, compressed air illness, and poisoning from lead, phosphorus, arsenic, mercury, or their compounds. Ohio, Pennsylvania, and New Jersey have laws requiring the monthly examination by a physician of workers engaged in the use of certain poisonous lead salts.

There is considerable legislation for the regulation of lighting, heating, and ventilation, and for the provision of seats, dressing rooms, and toilets, but much more remains to be done. Although it is generally recognized that a great deal of ill health is due to eye strain, artificial lighting in the factories of the United States is notoriously bad. A forward step, however, was taken in Oregon in 1919, when a law was enacted requiring factories to be lighted according to standards recommended by the Illuminating Engineering Society. No state has adequate laws regulating temperature in factories, and, although about half the states have legislation regarding ventilation, the wording of these laws

is so vague as to mean but little. Seats are required for females, at least in mercantile establishments, in almost all states; also separate and sanitary toilets.

Efforts to make manufacturing in tenement houses less hazardous, from a health point of view, appear to have been futile. Notwithstanding the abandonment of the theory of fomites, conditions in tenements apparently were considered dangerous to the health not only of the workers but of the purchasers of their product. Accordingly in 1913 New York State enacted legislation forbidding work in tenement homes on food products, dolls or dolls' clothing, and on children's or infants' wearing apparel. The prohibition "was applied to these articles first," state Commons and Andrews, "because of their close relation to the public health especially the health of children." However the health of purchasers may be affected by tenement house manufacturing, the conditions found in many tenements unquestionably endanger the health of workers.

Air pressure, artificial lighting, poisonous gases, explosive dusts, dampness, intestinal parasites, and extreme heat are among the health hazards in mining toward which legislation has been directed. Inspection and various protective devices are now required by law.

The condition of seamen prior to 1915 was deplorable. Since that time, as a result of federal legislation, proper washing places and sleeping rooms, hospital space, fumigation, heating, lighting, ventilation, and drainage have been required.

Housing.—Although the manufacture of clothing even in the dirtiest tenements probably does not constitute a risk to those persons who buy or wear it, it is apparent that housing conditions in tenement districts where clothing is made are not conducive to the health of the workers. But even here it is difficult with data now available to establish causal relations. It will be remembered that in Berlin tuberculosis was much more prevalent among families occupying

one room than among those occupying four or more rooms, but this does not necessarily mean that the greater prevalence was due directly or entirely to overcrowding. Such influences as personal habits, poverty, and nutrition must be taken into consideration. However, it is important to observe that in some instances bad housing and a high tuberculosis rate are found together.

The centralization of population in large cities makes the subject of housing an important one to the sanitarian. Congestion appears to have at least an indirect relation to the spread of colds, tuberculosis, pneumonia, and other respiratory diseases. Dampness, inadequate light, absence of sunshine,* noise, poor ventilation, defective gas fixtures, common toilets, lack of screens, excessive height of buildings necessitating stair climbing, and proximity to factories expelling poisonous dusts and gases—surely all these conditions tend, at least, to produce ill health.³⁰

The chief remedy for bad housing is legislation. The housing laws of the United States deal more with structural safety than with sanitary requirements. There is difference of opinion about the function of health officers in regard to sanitary housing. In Rosenau's opinion, housing comes under the purview of good health administration.³¹

Immigration.†—Attempts to improve housing conditions lead to the problem of immigration, because the greatest congestion is found among the foreign born. The distribution, according to nativity, of the population of continental United States in 1920 is shown by the graph (Figure 66)³² on the following page.

Immigration was at its height in 1907 and again in 1914, during each of which years 1,200,000 foreign born were admitted. It dropped rapidly during the war, but rose again in 1920, and in 1921 there were over 800,000 admitted. However, the Immigration Act of that year brought im-

* See page 161.

† See Appendix 3 (page 443) for population data by states.

migration during the fiscal year ending June 30, 1922, down to approximately 300,000.³³

There is no conclusive evidence to show that sickness is

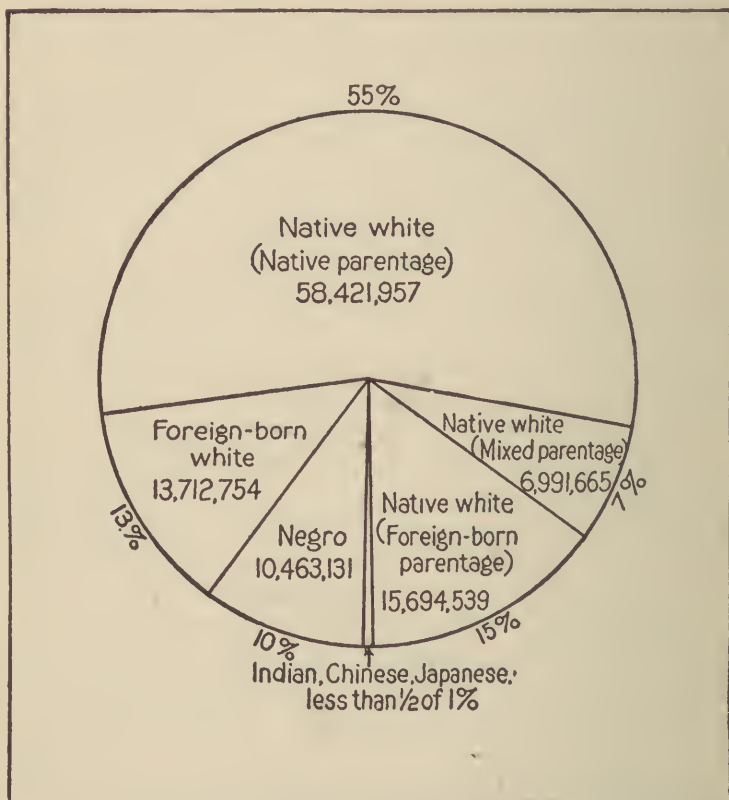


FIG. 66.—DISTRIBUTION BY NATIVITY OF THE POPULATION OF THE UNITED STATES, 1920.

either more or less prevalent among the foreign than among the native born. Reports show, however, that the percentage of rejections of drafted men was higher among those coming from alien than among those coming from native

communities. More insanity seems to exist among immigrants than among native-born persons. In 1918, the foreign born comprised 30.4 per cent of the population of New York State, but 46.4 per cent of all admissions to state hospitals for the insane that year were foreign born.³⁴

A study made in Pennsylvania and New York shows that the death rate among the foreign born was considerably higher than among the native born. The following table ³⁵ gives the standardized death rates per 1,000 population ten years of age and over ³⁶ for the state of New York (those for Pennsylvania are similar) :

	<i>Male</i>	<i>Female</i>
Native born of native parentage.....	13.8	12.4
Foreign born	17.3	16.2

One should not conclude from these figures, however, that the difference in death rates is due wholly, or even largely, to differences in racial stock. It may be due at least partially to differences of occupations, hereditary differences, and group traditions; probably, also, a larger proportion of immigrants than of native born are employed in hazardous industries.

Quackery has flourished among immigrants because of their ignorance of medical practice in this country. Strange as it may appear, what is printed in a newspaper is authoritative in the minds of many foreign born, even though the material is a paid advertisement. Quack advertising in most newspapers has decreased during the past ten years, but up to 1921 it had greatly increased in foreign language newspapers. During 1918, over 700 medical advertisements in 18 different languages were clipped from 100 such papers, out of 1,223 then published. In some, 50 to 60 per cent of the advertising income was derived from medical firms. Attempts were recently made by the Foreign Language Information Service, however, to sup-

press quack advertising, with the result that it has been eliminated by many of these papers.

The investigations of the New York Bureau of Industries and Immigration show that "museums of anatomy" and quack doctors defraud foreigners to the extent of many thousands of dollars weekly. The proprietor of one large office stated that unless the profits averaged \$4,000 a month the establishment would be closed. One man was sentenced to six months in the penitentiary, but when he was released, he simply opened another office under a different name, and succeeded in swindling the immigrant population of another county out of \$36,000 in about six weeks. He not only robbed ignorant persons of their entire savings, but operated "to the detriment of life and health by his unscrupulous deception, errors of diagnosis, and improper treatment."³⁷

There are a large number of benefit societies among immigrants. Out of 313 such societies in Chicago, a majority of them paid death and funeral benefits, 58 per cent paid sickness and accident benefits, and about 12 per cent, medical benefits. The sickness benefits in a great majority of cases amounted to \$5.00 a week or less. In most cases these amounts must be used for family expenses, and there is little chance that proper medical attention can be secured through such aid.³⁸

Many of the dispensaries of our large cities care for a large number of immigrants. At the Boston Dispensary, which admits about 35,000 patients a year, 45 per cent during one recent year were foreign born, and an additional 30 per cent were children of immigrants; 34 different nationalities were represented. Sometimes, however, immigrants feel strange and lost in dispensaries where their native language is not understood; often there is a long waiting period before treatment; and there is a fear among them that the doctors "practice" on them.³⁹

More than half of the employees of iron and steel works, oil refineries, meat packing establishments, furniture fac-

tories, tanneries, woolen mills and cotton mills, approximately four fifths of those employed in sugar refineries, and varying proportions of workers in other industries, about 1910, were foreign born. The further development of industrial health service, particularly that part of such service which deals with the families of industrial workers, will solve to a considerable extent the health problems of the large proportion of immigrants to be found in industry.⁴⁰

State and city boards of health and private health agencies will do well to imitate the initiative and originality of the quack, in learning to understand the immigrant, and in devising methods to help him prevent disease and attain a higher degree of health.

Many city health officers have shown by their statements that they have little sympathetic knowledge of the problem of immigration. They apparently have reached the conclusion that the only way to deal with the health problems of immigrants is to use the big stick. Says one Middle Western health officer:

Force them to use the American language. We have Welfare Stations with Americans in charge. I will not employ anyone who talks to them in a foreign language. It is up to them to learn English—not us to learn their languages. I have no patience with less strenuous methods.

It is refreshing to find others who believe that the immigrant can be educated to see in the health department an institution organized to benefit, not to persecute him. The head of a modern city board of health in the East believes that “until such time as English is universally spoken we should endeavor to reach the foreigner by all possible means.”

The most helpful work done by city boards of health up to 1922 in dealing with the problems of immigrants was the employment of visiting nurses to do infant welfare work, tuberculosis work, school nursing, prenatal work, and general public health nursing.⁴¹

Instincts in Industry.—The intelligent employer will interest himself in the housing of his employees, he will seek to provide health service in his place of business, whether his employees are native or foreign born, and he will also endeavor to understand the relationship of human instincts and their control to his employees' health—to bring about a better adjustment of the worker, who by nature is still the cave-man, to our present highly industrialized civilization.

If the instincts of constructiveness and workmanship, self-assertion, and ownership, and if the parental, sex, and play instincts are too much repressed; if, in other words, the worker, with his heritage of powerful primitive impulses, is confined to a monotonous task, at low wage, many hours a day, and is permitted to have no other part in the development and management of the industry, there are likely to be pathological results. The effect which the economist will see is industrial unrest; that which the sanitarian will observe is mental ill health. The employer should be interested to avoid both.

Opportunity should be given the employee to express his instinct for workmanship as fully as modern industry permits; he should be able to see the result of his labor take form and become the finished product. A participation of the employee in the management of the business will give an opportunity for the expression of the instincts of self-assertion and ownership; to some degree at least he may be made to feel that he is a part of the industry and that it belongs to him. Adequate wages and proper hours of labor will make possible a larger participation of the worker in family life and play, and thus the instincts associated with these life activities may be given healthful expression.

Delinquency and Crime.—On January 1, 1910, the population of penitentiaries, jails, workhouses, and reform schools in the United States was 136,472, of whom 24,974

were in reformatories exclusively for juvenile delinquents; and July 1, 1922, the total population of penal institutions was 163,889, an increase of more than 27,000 over 1910. Three to four times as many persons are imprisoned during any year as are found in institutions at any one time;⁴² and in New York City alone, nearly 45,000 children under the age of sixteen have been before the Children's Court during three recent years.⁴³

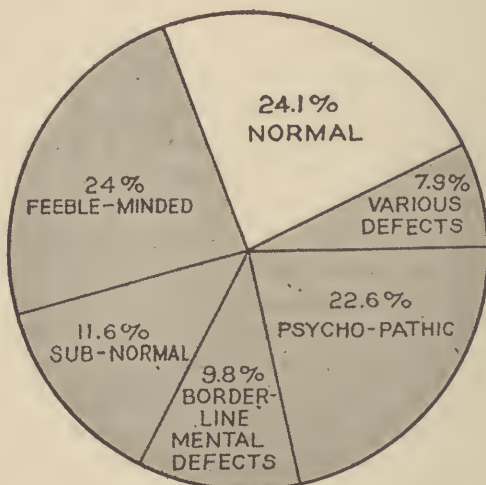
In New York City, there are about 300 truant officers and numerous schools and protectories, where truant and delinquent children are sent. In addition there are various child welfare organizations and a great many police and court officials. The employment of such persons and agencies throughout the United States, combined with the expense of maintaining the jails, workhouses, penitentiaries and reformatories, requires a huge annual expenditure which it would be difficult to estimate.

The sanitarian is concerned with this vast expense because in a large proportion of cases delinquency and crime are due to mental ill health. About one third of 150 delinquent boys in New York City, between the ages of eight and sixteen, were found upon examination to show various symptoms constituting a neurosis.⁴³ Of 600 persons admitted to Sing Sing Prison, 59 per cent showed some form of nervous or mental abnormality, 12 per cent being insane, 28 per cent, intellectually defective, and 19 per cent, psychopathic.⁴⁴

A survey in Cincinnati showed that 75 per cent of 657 delinquents were abnormal mentally (see Figure 67). Conditions revealed by the investigation have resulted in the setting aside of \$30,000 a year for a mental hygiene clinic. Social agencies, the juvenile court, the schools, and eventually the municipal court are to refer cases believed to involve mental abnormalities to this clinic for diagnosis, treatment, and follow-up work.⁴⁵ A traveling clinic was organized in 1922 in Philadelphia, at the suggestion of the Director of

the Department of Public Health, for the examination of school children with behavior abnormalities.⁴⁶

The mentally abnormal who become delinquents include hyperactive, hypoactive, emotional, and anxiety types, also those with faulty functioning of the endocrines, as well as those who are mentally retarded. These abnormal mental



DELINQUENCY CLASS

FIG. 67.—PERCENTAGE OF 657 DELINQUENTS IN CINCINNATI WHO WERE SHOWN UPON EXAMINATION IN 1922 TO HAVE VARIOUS MENTAL ABNORMALITIES.

states may be due, at least partially, to unfavorable influences on the sensitive mind of the developing child, and sometimes to such physical causes as insufficient diet and general lack of hygiene in the home.⁴³

The remedies lie largely in the improvement of the conditions of early life, in an intelligent and persistent effort to readjust mentally abnormal persons to their environment, and in a better classification and treatment of those at

present in criminal institutions.⁴⁴ The hygiene of childhood must be developed to include mental hygiene. This, together with improved nutrition, better facilities for play, and measures which will prevent the diseases of childhood and their sequelæ, will tend to bring about a reduction in delinquency and crime. Such efforts as have been made in Cincinnati must be extended throughout the country. The work of the Division on the Prevention of Delinquency of the National Committee for Mental Hygiene, if properly supported, promises to accomplish much in this field.

Illegitimacy.^{46a}—The problem of illegitimacy bears a close relation to infant mortality. In England and Wales, for the year 1915, the death rate among infants born in wedlock was 105 per 1,000 births, and the rate for infants of illegitimate birth was 203 per 1,000 births. In 1916 and 1917, a similar difference was in evidence. This might not be a serious national problem were there comparatively few illegitimate births. But it is estimated that in the United States there are over 32,000 illegitimate white births each year.

Prostitution.—Sometimes employed girls become prostitutes because of the monotony of industry or low wages, but more often, perhaps, because of the repression by parents of social impulses and a lack of wholesome recreation. Some girls are led into prostitution because they are feeble-minded and thus easily become victims of unscrupulous men (about 30 to 50 per cent of girls of this type coming in contact with courts and institutions have been found to be mentally subnormal).⁴⁷ Others, because of a normal desire for companionship which they find it difficult to satisfy in a socially accepted manner, turn for company to men who lead them into immorality. In still other cases, a feeling of inferiority consciously or subconsciously influences the conduct, and the girl becomes a prostitute in order to "get herself across" as a human being and attract attention.

Prostitution is a health problem, because it is the cause

of much venereal disease. A considerable number of investigations show that, at any one time, about 60 per cent of prostitutes have either syphilis or gonorrhea or both diseases.⁴⁸

The remedies, with which the sanitarian should be familiar, are varied. Among those of first importance is the control of the feeble-minded. It seems necessary to confine some feeble-minded prostitutes permanently in institutions; vocational education and placement should be provided for others. Some students of prostitution believe that it will continue until the demand ceases and that this will not happen until economic conditions permit early marriage. Then, when marriage becomes possible, houses or apartments where children are permitted must be provided, or birth control measures will become the only alternative. It is important to provide for girls the kind of education which will enable them to understand and direct their sex impulses into proper channels; and, since a normal desire for recreation, wholesome fun, and companionship is frequently the cause of the early steps which lead to prostitution, it follows that provision for wholesome recreation will tend to prevent its growth.

Heredity and Eugenics.⁴⁹—Most sanitarians wish to participate in the extension of such measures as are in accord with the development of a healthier race. If they are intelligently to pursue such a policy they must be informed regarding the data now available in the field of heredity and eugenics; they will wish also to encourage such researches as will increase our knowledge of these subjects.

It is generally agreed, of course, that no infectious disease is transmitted by inheritance—that is, neither bacteria nor protozoa change the germ cell. It is known, however, that one may inherit susceptible mucous membranes, and thus be more likely to develop hay fever than other persons; also that syphilis can be passed on from mother to child, when the treponemata, traveling through the placenta, reach

the blood stream of the offspring. Some forms of insanity are known to be hereditary; there is a little evidence that a tendency towards cancer passes from one generation to another and develops under certain conditions of irritation; and epilepsy is considered, though perhaps erroneously, to be transmitted from parents to offspring in some instances. Thus progress has been made. But in general our knowledge of the transmission of disease through heredity is meager. The Eugenics Record Office at Cold Spring Harbor, New York, is seeking to obtain pedigrees of families in which rheumatism, cancer, diabetes, chorea, and other diseases appear. Such researches may throw much more light on the whole subject.

If susceptibility to a disease may be inherited, may immunity be also? That a population gradually may develop immunity to a disease, is believed in some quarters; but it is very doubtful whether resistance actually is acquired and transmitted to succeeding generations. In some instances it is perhaps more likely that the disease germ has become less virulent. Furthermore, epidemics may, in a sense, appear to produce immunity, when the disease kills off the more susceptible, leaving the less susceptible to survive, they in turn passing on to future generations their relatively greater degree of immunity.

Eugenics, according to Galton, is "the study of agencies under social control that may improve or impair the racial qualities of future generations either physically or mentally."⁵⁰ If an epidemic, then, tends to make a population less susceptible to a disease, it may appear to some persons that it results, accordingly, in an improvement of "the racial qualities of future generations," and that it should be permitted by those in charge of the public health to take its course.

Therefore, the question arises, Do not certain public health measures tend to keep alive those less equipped by nature to survive—would it, perhaps, not be better for the race

to let nature take her course and kill off the less fit? Perhaps. But "less fit" in respect to what "unit characters" or qualities? Were society dealing with dahlias or sheep and desired to preserve and cultivate certain characteristics or qualities, regardless of the possible loss to the stock of other characteristics, the question might easily be answered. But the human animal is a highly developed organism. Should the sanitarian assume that tuberculosis or diphtheria destroys the less fit, and should he refrain from applying certain well-established measures for their control in the belief that these diseases were natural agencies for weeding out the unfit, he would be permitting the impairment or death of many individuals with inheritable qualities far more important to the race than a relatively low degree of immunity to a single specific disease. Influenza, infantile paralysis, and certain other communicable diseases attack the rich and the poor, intellectuals and feeble-minded, apparently with an equal degree of destructiveness; and, while it may appear that the poor (who are sometimes, but not always, the ignorant) are more susceptible to tuberculosis and possibly to pneumonia, it cannot be assumed, on the basis of present knowledge, that they are less fit to survive, for among the children of the poor may be future geniuses. All the commonly approved health measures appear in the light of biology and sanitary science to be eugenically sound; the race cannot be improved, apparently, by letting the sick die off.*

But there are specific and more or less practicable eugenic

* Another question arises in the mind of the thoughtful sanitarian which cannot even be discussed here for lack of space. It can only be briefly stated: If the mortality rate continues to drop, if immigration is maintained even at the present curtailed rate, if international conferences or a league of nations prevents future wars (which hitherto have reduced the population of all nations at frequent intervals), what measures will be necessary to prevent the population of the United States becoming too large for the available food supply? Raymond Pearl suggests that in less than 200 years the population of the United States will be almost doubled, and that there may be then required almost twice as much food as can readily be raised within the country.⁵¹

measures which may be developed. If possible, some means should be devised to encourage a higher birth rate among the more intelligent and healthy classes. The nation needs for its future citizens more individuals from such stock. On the other hand, it is definitely known that the mating of two feeble-minded persons is almost certain to produce feeble-minded children, and that the marriage of individuals with syphilis and certain mental diseases is likely to result in diseased and defective offspring. Some states have enacted laws requiring medical examinations before marriage, in the hope of preventing the transmission of syphilis and gonorrhea to offspring. Measures of this nature are included under "negative eugenics." Education of the public generally regarding the transmission to offspring of these diseases may perhaps accomplish more than such legal measures. Present knowledge regarding feeble-mindedness surely justifies measures for preventing the propagation of the lowest grades. Further consideration perhaps needs to be given to the higher grades known as morons. There is need, too, for far greater attention to transmission by heredity of *dementia præcox* and other forms of insanity.

The growth of popular education and increased attendance in high schools and colleges has developed greater interest in the principal implication of eugenics, viz., that it is possible to improve the racial qualities of future generations physically and mentally. The sanitarian of the future surely will wish to encourage all measures which promise to improve the physical and mental health of the people. The danger is that society may proceed upon inadequate knowledge. The sanitarian is not primarily an overenthusiastic reformer. In fields where present knowledge is inadequate, he is in a position to render valuable service by pointing out the need for further study; he may also be helpful by wholeheartedly supporting such measures for improving the health of future generations as are obviously sound.⁵²

The Relation of the Sanitarian to Sociological and Economic Problems.—It appears that the sanitarian of the future must be more than a bacteriologist and a hygienist and an engineer and a statistician. He should have at least a basic knowledge of economics and sociology; he must know the chief facts in regard to labor, the distribution of income, poverty, housing, prostitution, recreation, eugenics, and allied questions, together with recognized principles and laws in these fields. For an understanding of these problems, a knowledge of modern psychology also is necessary. As a sanitarian, he may not be able to raise wages and regulate the employment of women and children, but if he is informed regarding these aspects of public health, when he is called upon for advice as an individual or as a member of a commission, being free from the prejudices which limit the usefulness of most uninformed persons and being guided by his enlightened interests in the welfare of the community, he will occupy an enviable position of usefulness.

CHAPTER XVIII

THE SOCIALIZATION OF PREVENTIVE AND CURATIVE MEDICINE

In a town from which health work had banished malaria, a physician was asked how his profession had been affected. "If it hadn't been for the influenza," was his answer, "I'd have gone broke. That saved us."¹ This jocular reply suggests that there is a clash between preventive medicine and curative medicine. An attempt will be made in this chapter to outline modern trends in the development of preventive and curative medicine, to determine whether these trends are leading toward any real and serious conflict, and to consider the attitudes of physicians, both private practitioners and those engaged in public health work, in respect to the present situation and the future needs of the people.

The Socialization of Preventive Medicine.*—"The more I study Americans," a Chinaman is quoted as saying,² "the more I am convinced that they are mentally diseased. Instead of doing everything in a common sense manner, they try all they can to do it in the very opposite way. At home, for example, you and the other members of your Mutual Health Association would pay Dr. Wun Lung and his assistants each a liberal salary to keep you all well, and

* In considering the socialization of medicine, it should be observed that "social medicine" does not necessarily mean "state medicine." The benefits of medical and sanitary science, says Haven Emerson,^{1a} may become available to a larger part of the population through social organization without the unfortunate effects which many believe are inherent in "state medicine." The socialization of medicine may provide more rather than less opportunity for individual initiative.

pay nothing when you are sick. On this account he and his young men work very assiduously in calling regularly and examining every member of the union, and all of you enjoy comparative immunity from illness. Here in America a physician is paid by the amount of your sickness, and the less you are able to earn any money, the larger and more onerous is his bill. As a result, some doctors, I am told, yield to temptation and keep their customers sick. The consequence is that those who have the largest number of sick and dying are the richest, most esteemed and influential, while in China they would be ostracised and not allowed to practice."

It is not true that the Chinese have such a system of preventive medicine as the Chinaman describes; but the idea of employing a physician to keep one well has become so well established that it has almost the validity of a reality. John M. Dodson, Dean of Medical Courses at the University of Chicago, ventured the prediction about 1917 that in the not distant future the "family physician" would become in large part the "family health advisor" and would find his largest usefulness and derive a large part of his income in the field of preventive medicine.³ George E. Vincent, Chairman of the International Health Board, suggests that the physician of the future receiving an annual retaining fee from his clients will take the initiative and keep a watchful eye upon them.¹ Then a case of illness would be, he says, not the physician's opportunity, but a reflection upon his vigilance.

It would seem entirely practicable for physicians to retain their private patients and systematically undertake to keep them well, as Chinese physicians are supposed to do. But little has been accomplished in this direction. A few tendencies may be briefly outlined: (1) There is a general trend toward more office consultations for the purpose of cutting short the progress of minor ailments. Furthermore, the American Medical Association has recently advised its

members to prepare themselves to make periodic examinations and to announce to the public their readiness to do so. One physician in New York City is reported to have definitely undertaken to obtain clients for the purpose of keeping them well; and it is possible that others have done likewise. (2) There is the disposition of private physicians in some quarters to practice in groups. Group medicine is probably somewhat more "preventive" in character than individual practice; it tends to encourage the periodic examination, because one is more likely to go to a group for a general overhauling than to an individual physician. But there is some dissatisfaction with the manner in which group practice is provided; one writer likens the service of the group clinic to that of the cafeteria and protests against its commercialization.⁴ The growth of group medicine has not been so extensive as may generally be believed. According to the report of the Council on Medical Education and Hospitals, in May, 1922,⁵ there were at that time only 139 groups in existence in the United States, and less than 1,000 physicians combined in them.* (3) There is a tendency among some pediatricians systematically to provide for the health of babies for a short period after birth. Programs providing such care have been adopted by various pediatricians in San Francisco, Oakland, Alameda, and Berkeley, California. One of them writes that they have proved very successful, parents "are relieved of a great deal of responsibility for a very nominal fee," he says, "and they receive the best instructions possible regarding the care and feeding of the infant. In other words the service functions for them practically the same as does a health center."^{5a} (4) There is the generally observed custom of dentists to encourage their patients to report regularly for examination. (5)

* In June, 1923, the American Medical Association reported that there were listed 270 "groups" with a total of 2,430 physicians, but that "not more than 100 would answer to even a liberal definition of group medicine."

There seems to be developing in certain parts of the Middle West the practice of employing with a common fund a physician systematically to look after the health of all the members of the community. In Sharon, Kansas, a village of 325 inhabitants, a physician is employed by the Sharon Health Association at a salary of \$3,000 a year, and is provided with an office, telephone, light and fuel. The expenses are raised by assessing each member an equal amount, with the understanding that no annual assessment shall exceed \$15. In a small town in Indiana, each resident pays a given percentage of his income into a common fund which provides for the employment of a salaried physician. In rural communities of Texas and Nebraska similar plans are being utilized. It is true that the physician in these various communities probably gives most of his time to curative medicine, but his employment by the year undoubtedly tends toward the development of preventive measures. In Sharon, for instance, a campaign for universal vaccination was successfully carried out, each patient paying only the cost of the vaccine.^{5b}

The rank and file of private practitioners do not appear to be greatly interested as yet in the development of preventive medicine, either in private practice or in public health work. Non-medical agencies are undertaking its promotion, largely because, John M. Dodson believed in 1923, the medical profession is not assuming the leadership for which the public has looked.⁶ Victor C. Vaughan, when he was President of the American Medical Association in 1916, reported that the Michigan State Department of Health, with a fund of \$100,000 for the study of tuberculosis, wanted a man to take charge of the work. The Secretary of the Department wrote to the executive officer of the National Tuberculosis Association, who recommended four men; three of them were non-medical men.⁷ "Medical men are prone to underestimate the degree to which the public is already informed as to the developments of modern

medicine and its possibilities in the prevention of disease," says Doctor Dodson, ". . . can one assume for a moment that a public so informed will fail to demand the institution of those measures of personal and community hygiene which will bring to them the beneficent fruits of modern medicine?" . . . "The medical profession," he says, "may fight the irresistible movement of the people to secure these benefits . . . in which case the profession will certainly be brushed aside or crushed as by a steam roller. Or the medical profession may recognize this trend and assume that leadership which is its right and duty to assume." ⁸

However backward the large number of private practitioners may be, the leaders of the medical profession have looked beyond the interests of their individual patients and of themselves and have assumed a part of wise and invaluable leadership in the development of preventive medicine. They are true to the code of medical ethics, adopted in 1847 by the American Medical Association, which recognizes physicians as conservators of public health and declares that "it is a delicate and noble task, by the judicious application of public hygiene to prevent disease and lengthen life." ⁹ Such physicians are gradually coming to think of themselves and to be regarded by the public as primarily responsible for keeping well all groups within the population. In the future, as in the past, sanitary engineers, bacteriologists, sociologists, nurses, educators, and other technically trained persons will here and there lead the way, but if society is to proceed on a sound basis in the development of preventive medicine and public health work in the United States, it must look to physicians for a higher degree of direction than they have thus far assumed.

Physicians as a group have not done much to develop preventive medicine in private practice. But there are at least two organizations composed solely of medical men, who are doing public health work—the Public Health Com-

mittee of the New York Academy of Medicine and the Field Activities Committee of the Iowa State Medical Society. Each employs a full-time executive officer, and each is doing admirable work. In Alabama, a Board of Censors of the State Medical Association acts as a committee of public health, employs the state health officer, and has general charge of the health work of the state.

Physicians, other technically trained persons, and laymen, working together, have established during the past fifty years a considerable number of official and private or volunteer health agencies. These organizations employed at the end of 1922 approximately 17,000 persons, as follows:¹⁰

Officers of the U. S. Public Health Service.....	260
Principal and subordinate executives of state, city, and county boards of health (including sanitary engineers)	1,020
Laboratory workers of official agencies.....	1,200
Plumbing, sanitary, dairy, and food inspectors.....	3,000
Public health nurses of official agencies (estimate).....	5,000*
Public health nurses with private health agencies.....	6,000
Officers and other employees of private health agencies (in addition to public health nurses) (estimate).....	700
Total	17,180

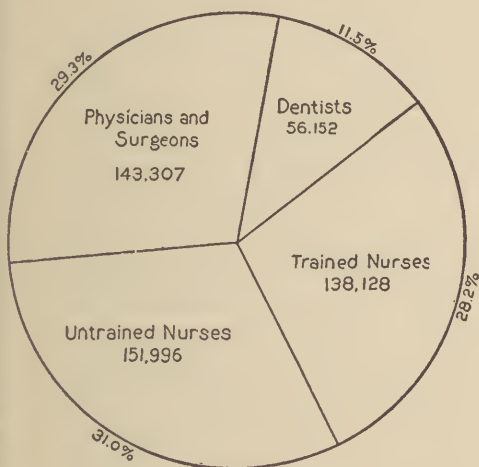
As may be seen later, these amount to about one thirtieth of the number of persons who are engaged in curative medicine. (See Figure 68.)

For many years the chief functions of the official health agency were the sanitation of the environment and the prevention of communicable diseases by isolation, vaccination, and such measures. The sanitarian was interested chiefly in the control of smallpox, typhoid fever, malaria, and similar infections. When the private health agency came into the field the interests of both types of organiza-

* A few public health nurses are doing curative work, including most nurses connected with dispensaries. All, however, are included in this list and none in the list on page 384 because there is no way to ascertain the number doing curative work only.

ENGAGED IN CURATIVE MEDICINE
489,583

ENGAGED IN PREVENTIVE
MEDICINE
17,180



(For legend, see below)

	<i>Per</i> <i>Number Cent</i>	
(a) Principal and subordinate executives, official agencies	1,280	7.5
(b) Laboratory workers, official agencies...	1,200	7.0
(c) Plumbing, sanitary, dairy and food inspectors	3,000	17.4
(d) Public health nurses, official agencies..	5,000	29.1
(e) Public health nurses, private agencies..	6,000	34.9
(f) Officers and other employees, private agencies	700	4.1

FIG. 68.—NUMBER OF PERSONS ENGAGED IN VARIOUS KINDS OF CURATIVE AND PREVENTIVE MEDICINE.

tion began to expand, and there developed school health work, industrial health service, public health nursing, infant welfare stations, clinics, and dispensaries. This work was at first preventive in character; but it is becoming partially curative, as will now be seen.

The Socialization of Curative Medicine.—The development from socialized preventive medicine to the socialization of curative medicine has been almost inevitable under present conditions and influences.

First is the unequal distribution of physicians. There are over 143,000 medical men engaged in private practice in the United States—one, on an average, to every 726 inhabitants,¹¹ which is nearly twice the ratio in any other country in the world¹² and more than double the ratio in England.¹³ It would seem that there should be little difficulty in providing for the needs of all sick persons. They are not all well cared for because physicians, nurses, and facilities for the treatment of disease are unevenly distributed.

While in our cities of 200,000 to 500,000 population there is one physician to every 493 persons, in rural districts the supply is inadequate—in communities having a population below 5,000, there is only one to every 1,020 inhabitants.¹¹ Of all physicians, only 37 per cent live in small communities, including in the aggregate over one half the population.* The situation is not so bad as it would be without good roads, the telephone, and the automobile. Sometimes it is better to go to the city for medical care, even though a physician is near at hand. Nevertheless, there appears to be a dearth of doctors in many rural districts. Small towns in Massachusetts have advertised special advantages in the hope of attracting physicians. In Fayette, Lucas and Sandusky counties, Ohio, there was (about 1920) only one physician to every 2,711, 2,669 and 2,416 persons respectively, while in the large cities of the state there were

* See Appendix 8 (page 455) for table showing distribution of physicians according to population groups.

relatively many more—in Columbus one to every 442 persons.¹⁴ In some parts of New York State, according to the state commissioner of health, there are no physicians within a radius of twenty-five or thirty miles. One mountain community recently lost its only physician and “within three weeks 250 of its 300 inhabitants were reported ill from influenza and other diseases, with only such medical attention as could be obtained from a busy physician in another village twenty miles away.”¹⁵

In regard to hospital service, a similar situation exists. There is for the whole population of the United States an average of one hospital bed for every 340 persons;¹⁶ but, although in fifty of our largest cities there is one bed to every 185 persons, for the rural population there is an obvious dearth of hospital facilities, 56 per cent of the counties of the country having no hospitals at all. Furthermore, the hospitals which are available are not efficiently used, an average of only 67 per cent of beds being occupied daily.

When a school physician, moreover, discovers diseased tonsils in a city child, there is a family physician to correct the defect, but in many rural sections, physicians competent to perform a tonsillectomy are not available.

In order to correct the defects of rural children, it has seemed necessary for state boards of health and other agencies not only to conduct the examination of children but also to provide medical and surgical treatment. The centralization of medical facilities in cities has led also to the development of public health nursing in rural districts. Other social measures have been proposed to remedy the unfortunate conditions of the country dweller.

Secondly, treatment of certain communicable diseases has seemed necessary, from the public health point of view, as a preventive measure. For instance, in working out programs for the control of syphilis and gonorrhea, it has appeared insufficient to urge through educational activities

that infected persons consult their family physicians. A great number ignore such advice. In many instances, family physicians competent to treat disease according to modern methods have not been available at compensation within the means of the sick individual. Because venereally diseased persons are a source of danger to those not infected, the Public Health Service and the state departments of health have assumed, apparently, that treatment and cure are essential parts of the program and important and legitimate functions of health authorities.

The economic status of various large groups of the population (explained in the preceding chapter) also has been an influence in the establishment of socialized curative medicine. Both in communities with a shortage of physicians and hospitals and in those districts where there is an adequate supply, a considerable proportion of persons, because of their economic condition, find it impossible to pay the fees of many physicians in private practice, not to mention the cost of hospital care. In the old-fashioned small community, the private practitioner was willing in a majority of cases to look after all sick persons regardless of their ability to pay, but in the modern industrial community the situation is radically different. Here the old relationship no longer exists. A large number of persons with low incomes obtain treatment at free dispensaries. For those who comprise the large, so-called middle class, there are few places where expert advice may be obtained at fees within their means. Apparently there is a pressing need for more dispensaries of the type of the Cornell Medical School Clinic.

Finally, there is developing a feeling of responsibility on the part of the state for the correction or treatment of the defects and diseases of its citizens. In earlier days, Eugene R. Kelley (Commissioner of Health of Massachusetts) reminds us,¹⁷ the health officer under no circumstances would insist that a child's adenoids be removed. In 1918, when the nation was at war, Doctor Kelley observed a rapidly

increasing sentiment which insisted that the child should be made physically fit to play his part later in either the industrial or military forces of the country, regardless of tradition, of medical methods, of the child's total indifference, of his parents' poverty, stupidity, or religious convictions, or any other causes which tend continually to postpone treatment. "The new public health," continues Doctor Kelley, "will not only point out what should be done for the individual but will insist that whatever is needed is done. In other words, the new public health will more and more mean socialized medicine." In the years following the war, this feeling of responsibility towards the sick and defective seems not to have weakened. The state of Ohio now assumes responsibility for its 12,000 crippled children to the extent of subsidizing local boards of education at the rate of \$300 per child beyond the cost of school instruction for the normal child to provide for the establishment of special classes, and a further subsidy of \$250 per year for board if the child lives too far from the school to be transported to it.^{17a}

Largely as a result of these various conditions and influences, school health work and industrial health service during recent years have made distinct advances; the number of public health nurses has grown from 3,000 in 1912 to nearly 12,000 in 1922; and dispensaries and clinics have increased from 574 in 1910 to over 3,300 in 1922.* In other words, socialized curative medicine is becoming established.

Although these are striking developments, only a small proportion of physicians are having a part in social medicine as it is related to the cure of disease. There are almost 500,000 persons in the United States devoting their energies primarily to curative medicine,¹⁸ as follows:

* See pages 326 and 287.

Physicians and surgeons.....	143,307 * ¹⁹
Dentists	56,152
Trained nurses	138,128 ²⁰
Untrained nurses	151,996
<hr/>	
Total	489,583 †

The great bulk of these persons, including over 143,000 physicians, are engaged in private practice. It is important to observe, however, that in 615 of the 935 general dispensaries reporting to the American Medical Association in 1922, there were 1,268 full-time physicians employed and 9,929 part-time physicians.²¹ These figures leave out of account those connected with the balance of the general dispensaries and with some 2,500 special clinics.‡

Recent Opinions and Trends.—There are differences in the attitudes of physicians, as already has been observed, toward modern developments in preventive and curative medicine. "We have abolished the clinic as a public health institution," writes an officer of a Southern state department of health.²² The physicians in this state are absolutely opposed to health officers treating diseases and we cannot expect their co-operation unless we acquiesce to their wishes along this line. They argue that the indigent have always been cared for by the physicians along with their other practice. Many of them say that they have never refused treatment to any indigent patient. It is believed that if the clinic were pushed, it would cause such an antipathy to public health work that it would be impossible to secure

* See Appendix 7 (page 453) for table showing number of physicians in each state.

† This total does not include 4,773 midwives; 5,030 osteopaths; 14,744 healers of various kinds; attendants, clerks and stenographers in the offices of physicians, surgeons, and dentists; superintendents and other employees of hospitals, sanitariums and similar institutions; social workers; 80,157 retail dealers in drugs and medicines; drug manufacturers, jobbers and wholesalers and their salesmen and other employees.

‡ See page 302.

appropriations over the protest of the physician to properly carry on this work." It should be added that many physicians in this state show great generosity in treating indigent persons.

The Pennsylvania State Department of Health appears to have been developing socialized curative medicine without entirely realizing it. The cordial co-operation of the medical profession, essential to successful public health work, can be secured, said the former Pennsylvania State Commissioner of Health, Edward Martin,²³ "provided the Department confines its efforts to prevention and scrupulously avoids state medicine." But in the same address (before the American Public Health Association in 1922) he told with some pride not only of the establishment in Pennsylvania of 460 well-baby centers "usually" with the full approval of the doctors, "managed by them" and "paid for by the community," but also of the excellent work done by the Pennsylvania Department of Health in treating venereal diseases and tuberculosis. "When the profession will take over and make each clinic an active center of control," he said, "rather than a place to which those may come who so choose, the state will gladly transfer these clinics."

The Health Officer of New Mexico (C. G. Lockett) would subscribe to the proposition that every benefit of the art and science of medicine should be available to all the people.²⁴ What is feared, he suggests, is not the principle of socialized medicine but the mode of application. He continues: "What is needed is a thoroughly organized movement on a national scale, within the medical profession itself, to remedy the need before the initiative is taken entirely from medical hands, for there is hardly a health campaign of any kind which has not been sponsored largely by laymen, whether it be child health, tuberculosis, or any other sort of social betterment. . . . There is no reason that we should sit supinely by and see our prerogatives snatched from us. Is it not the prerogative of the pro-

fession to act as the expert adviser of the world on the cause and cure of disease? This does not consist of selecting our patients and leaving the rest for someone else, for by so doing we leave the opportunity and open the way for inexperienced hands to seize the reins. We are compelled to think of the group rather than the individual."

Lewellys F. Barker seems to have very much the same idea as does Doctor Lockett. "It seems likely that state medicine in one form or another is coming," he says,²⁵ "and if it is to come at all, would it not be well for the medical profession to see to it that its beginnings should be such as are best suited for the welfare both of the public and the medical profession? Unless medical men foresee urgent needs of the sort mentioned and meet them, we may have imposed upon us some wholesale form of state medical service such as oppressed both the public and the profession in Germany and in England before the war. It would be most unfortunate should such premature and badly organized attempts be made in the United States."

"We must join in on the great game of collective living and make ourselves felt on the constructive side," said Ray Lyman Wilbur in his Presidential address in 1923 before the American Medical Association. "By our failure to lead in some instances we are already being forced into a position that may be interpreted as obstruction to progress. The danger is that organized medicine may become a defense organization. If it does, it will lose rampart after rampart before the great offensive provided by the development and spread of science. We must be as altruistic in our public service as we have been in the relief of private need throughout the generations. . . ." ²⁶

Health departments in the future, W. S. Rankin (State Health Officer of North Carolina) believes ²⁷ will concern themselves not only with the communicable diseases which endanger a small minority of the population, but also with "the entire field of both pathology and physiology as the

two are related to the whole population, sick and well alike." He continues: "Under the old order of disease prevention there was, so to speak, a well-defined line of demarcation separating the work of those interested in social medicine from the work of those interested in private practice. Under the new program the aforementioned line of demarcation will disappear, and there will be a blending of the work of health departments and the profession." He believes that in the future the programs of state health departments will include a "tremendously enlarged personnel" which can be drawn only from the medical profession. "The profession, in assuming definite public duties, in adding to the field of private practice the work of social medicine, will and should expect reasonable remuneration from society"; and he explains that health departments in making up their budgets will have to provide for such remuneration.

Donald B. Armstrong is among those urging the further socialization of medicine. "The individual trained to care for sickness and build health," states an article of which he is a joint author,²⁸ "should be sure of an adequate income, not dependent on a chance excess of illness in his community. The cost factor should be eliminated both for the patient and the physician. Society cannot afford preventable illness. Society cannot afford to leave its elimination to a haphazard system in which the patient and the doctor make their decisions under the pressure of economic necessity." Armstrong suggested in 1920 a series of ten "next steps" (see next page), the adoption of which will greatly aid in bringing to all the people the benefits of modern medical science.

It is possible that the fears and objections of those with conservative tendencies will retard the adoption of such measures as Barker, Rankin, Armstrong, and others advocate, but during the four or five years following the World War, steady advances were being made. Present progress appears to rest on a sane basis. Those now responsible for

NEXT STEPS

1. The further development of public and private health organization, using their machinery for disease control, for the elimination of non-communicable and degenerative causes of disease and premature death, such as heart, kidney, and other affections, as through education in proper diet, cardiac classes, etc.

2. The further development of adequate training for medical men in medical schools, not only in the treatment and cure of specific cases of disease, but also in the science of disease prevention and early detection, the principles of hygienic living.

3. Adequate post-graduate instruction, providing a means for continuous, up-to-date contact with the more recent medical discoveries, possibly involving periodic re-examination of physicians on the essentials of diagnosis and treatment—thus strengthening the relation between the state and the physician, with the object of better medical service.

4. The extension of clinic and dispensary medical facilities on a pay basis for wider groups in the population—a further socialized use of the clinic method.

5. A great extension of organized, age-group diagnostic and advisory work, bound to come in the near future, including full-time medical, dental, nursing and clinical personnel and equipment for school children, industrial workers, etc., and providing for routine medical examinations.

6. Organized efforts to provide annual medical examinations for the population at large, through such agencies as the Life Extension Institute, medical examination clubs, national medical examination campaigns, etc.

7. The development under state or federal auspices of expert traveling advisory and consultant service for the general practitioners on diagnosis and treatment, covering difficult and doubtful cases in many of the specialties such as tuberculosis, infant welfare, internal medicine, etc.

8. Possibly the districting of medical service, immediately, at least to meet epidemic emergencies, leading perhaps to the setting up of competitive standards of excellence, graded on a basis of disease prevented and health maintained.

9. The reincarnation of the "old family physician," as the guardian of the family's health and the teacher of family hygiene—the treatment of the family to be carried out on the "keep well" basis, a practice erroneously said to be common in China, but one which shows definite signs of development in this country.

10. The further and more equitable development of accident and sickness insurance, merely an item in the whole program of socialization, but one around which centers most of the storm of discussion at the present time.

—D. B. and E. B. ARMSTRONG (from the *Survey*).

the development of official and private health agencies are persons of sound judgment. The attitude of twelve state legislatures towards compulsory health insurance should reassure the fearful.

CHAPTER XIX

THE PROBLEM OF PERSONNEL

THE most pressing problem in public health work to-day, according to the United States Public Health Service, is not the discovery of new scientific facts, nor is it the awakening of the public; it is the problem of personnel. During the last fifty years, such an unparalleled development of the sciences which contribute to the public health has occurred that, for a time, additional discoveries have become of secondary importance.¹ The need for funds is pressing, but the lack of trained personnel is even more serious. "The way they are appropriating money for public health in the Southern States frightens me," said an officer of the International Health Board in 1922, "because we haven't the men to send to them to help them spend it wisely."² So important did the problem appear to the Public Health Service that it called a conference early in 1922 of over one hundred leading university presidents, deans of medical schools, and sanitarians to consider the subject. Considerable helpful data were presented, and an Advisory Committee appointed, which in 1923 was doing important work on the problem.

Present Status of Public Health Personnel.—Lack of trained men and women is retarding the growth of public health work. There are not enough persons employed; and relatively few men in the work have had the benefit of adequate training.

Although there are more than 10,000 sanitarians of all kinds engaged on a full-time basis in official health organizations and about 7,000 employed by private agencies, including industrial concerns,³ this number is inadequate for

present needs; and to meet future requirements a much larger number will be necessary. For official agencies alone, according to John A. Ferrell's conservative estimate, there will be needed a force of over 29,000 within twenty years ⁴—a large number for new positions and others to replace those who will become incapacitated. The lack of public health nurses is especially marked. Though there were in 1922 about 11,000 employed, a need exists, according to the report of the Committee for the Study of Nursing Education, for approximately 50,000 public health nurses to serve the present population of the United States.⁵

It is appalling, in the opinion of Lewellys Barker, to think of the number of medical men and trained nurses who will be needed in the public health work of the future. "One scarcely sees how they are to be provided," he says. "I think it likely that a dilution method will have to be resorted to. A relatively small number of highly trained men and women could make use of a very large number of persons who can be trained for certain special but limited tasks. It is difficult to see how in any other way a personnel of the necessary magnitude can be supplied."⁶

Recent developments in public health work have differentiated the field into the following occupations:

Administrative work in	Dispensary dentistry
Rural, municipal, state and	Physical training
federal health agencies	Public health nursing and social
Dispensaries	work
Industrial health service	(Under the direction both of
School health service	health organizations and of
Private health organizations	public schools)
Sanitary engineering	Nutrition work
Public health laboratory work	Inspection work
including	Popular health education
Bacteriology	Public health law
Entomology	Research
Chemistry	Teaching (the training of other
Vital statistics	sanitarians)
Dispensary medical practice	

One or more of these occupations are to be found in the following fields:

General health work
Tuberculosis work
Heart disease work

Child hygiene
Mental hygiene
Social hygiene

To these fields may soon be added cancer control, if private physicians do not provide sufficient facilities for such

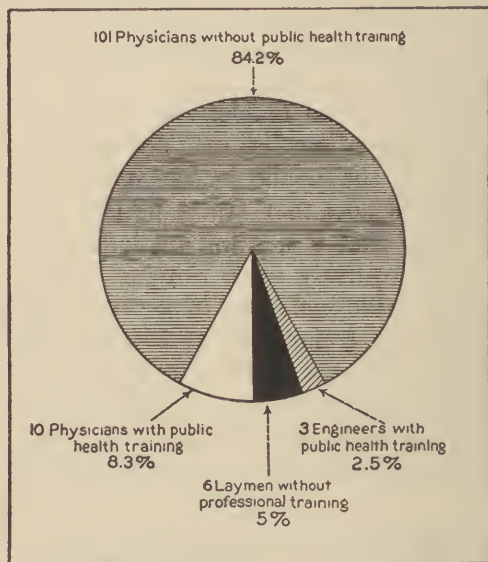


FIG. 69.—PER CENT OF HEADS OF HEALTH DEPARTMENTS OF 72 MUNICIPALITIES AND 48 STATES WHO HAVE HAD VARIOUS KINDS OF PROFESSIONAL TRAINING INDICATED.

activities as are now being promoted by the American Society for the Control of Cancer.

A considerable number of statements have been received by the Public Health Service from leaders in most of these occupations, and in virtually every one they state that the demand for trained personnel exceeds the supply.

In regard to the professional training of sanitarians now

employed, a few data may be given. The accompanying graph (Figure 69),⁷ based on a study of the training of the responsible heads of health departments in 72 municipalities and 48 states, shows that less than 11 per cent (8.3 plus 2.5) of those filling these important positions have had in college or university any special preparation for their work. Among the 342 principal and subordinate executive officers of state departments of health, Allen W. Freeman found that 58.8 per cent were physicians, but that only two of them and three others (1.5 per cent in all) had received special training for public health work.⁸ Eugene R. Kelley stated at a recent conference that, of the 65 cities and towns in Massachusetts having a population of over 10,000, in only about five was there a full-time medical officer with public health training.⁹

The school of hard experience, it is true, has produced a few leaders of outstanding ability. They are the men who have made possible the wonderful progress thus far achieved. But training of this kind is unsystematic and costly. If the men and women needed for the future are to be enlisted, better organized training must be provided for them.

The Training of New Personnel.—Although there have been for several years over 3,000 graduates each year from medical schools¹⁰ (see Appendix 9), there have been a conspicuously small number graduated with the D. P. H. degree. Of all kinds of graduate degrees in public health, only 66 were awarded in 1922. A list of schools with degrees conferred by each may be found in Appendix 10. This list reveals a conspicuous lack of standardization in the training of sanitarians and relatively low standards in some institutions.

In addition, there were awarded in 1922 by all universities Ph.D. degrees to 323 students specializing in various subjects which, in some instances, were probably related to preventive medicine.¹² These included: zoology or botany, 76; psychology, 29; bacteriology, 15; physiology, 18.

The graduate degrees in public health conferred in 1920, 1921, and 1922 were as follows: ¹¹ *

	1920	1921	1922
Certificate in public health.....	80	66	38
Master of science (in hygiene).....	3	4	1
Doctor of science (in hygiene).....	1	1	6
Doctor of philosophy (in hygiene).....	1	4	5
Doctor of public health.....	8	22	12
Certified sanitarian	4	0	1
Graduate in public health.....	0	0	2
Master of arts.....	0	0	1
	—	—	—
Total	97	97	66
Total, not including C. P. H. granted by one institution for short-term course..	35	56	54

The curricula of the institutions offering graduate courses in public health are superior to those of medical schools for the training of sanitarians. In some of them, however, insufficient attention is given to psychology, sociology, and statistics. If the suggestions of Barker, Pearl and others are acted upon, greater emphasis will be placed on these subjects than at present.¹³

The Schools of Hygiene and Public Health at Johns Hopkins and Harvard are liberally supported by the International Health Board, and they hold great promise of effective work for the future.

*The Training of Public Health Nurses.*¹⁴—At the present time nursing, alone among the important professions, conducts its training along the apprenticeship system. Hospitals, intended primarily for the care of the sick, must do the training of nurses, and they must do it incidentally. One fifth to one fourth of a student nurse's time is, therefore, wasted in non-educational routine. An even greater defect of the system is that the instruction is likely to be mediocre, if not altogether unsatisfactory. If the report of the Committee on Nursing Education is followed and if

* A total of 69 graduate degrees were conferred in 1923.

adequate endowment for nursing education is provided, as the Committee insists is essential, nursing will become a more attractive vocation than it is at present. The report provides for the training of three grades of nurses: one, the "nursing aid" or "nursing attendant" corresponding to the so-called practical nurse, with a training of nine months; a second, the registered nurse, with a training period of twenty-eight months; and a third grade, designated as the "public health nurse," with the same training as the registered nurse, and, in addition, eight months of graduate work in a special school for public health nurses. It is believed that the twenty-eight months' course of instruction under the new plan will provide a better training than does the present three-year standard course.

The Committee on Nursing Education apparently does not consider that a training of less than nine months is adequate, even for the so-called practical nurse. It should be noted, however, that a "training school for home and public health nursing" in Chicago conducts an eight weeks' home nursing course, consisting of three two-hour periods a week. This institution had graduated during the three years prior to 1923 approximately 11,500 nurses.¹⁵ This type of training is condemned by the Committee on Nursing Education. "Persons who have completed this forty-eight hour course, posing as nurses, have asked and received," states the Committee's report, "the same \$25 weekly fee as the graduate nurse."¹⁶

There are sixteen schools for public health nurses in the United States, an insufficient number, perhaps, to train the 50,000 nurses which the committee on public health nursing says are essential for adequate health work for the present population.* A new school for nurses has been organized at Yale University to provide the type of training recommended by the Committee on Nursing Education.

* A list of schools for public health nurses may be found in Appendix II (page 457).

The Training of Inspectors.—It has been observed that there are about 3,000 inspectors employed by various official health agencies, but none of them have had academic training for their positions, and no plan for their training has been generally agreed upon. It is believed by Allan J. McLaughlin, of the Public Health Service, that much of the inspection work of municipal health departments may be done by nurses or by policemen. On the other hand, there is a more distinct place for the inspector in rural health work, and W. F. Draper, of the Public Health Service, believes that a short period of training should be arranged for persons desiring to become inspectors. No university, so far as has been discovered, provides for the training of sanitary inspectors for departments of public health. In one instance, this work has been taken up by a training school for public service,¹⁷ which offers, in addition, courses for policewomen and protective officers, and school attendance officers; a course in sanitary inspection deals with the inspection of tenement houses and food establishments, and with streets and alleys, and refuse disposal.

The Reluctance of Medical Students to Enter Public Health Work.—It has been observed that there are relatively few physicians in public health work, and that the universities are graduating a very small number trained for this field. The attitude of medical students has been partially explained by 461 statements received by Edwin O. Jordan, of the University of Chicago,¹⁸ from medical students of four universities. Of these, 103 had considered more or less seriously taking up public health work, but most of them had abandoned the idea. The other main group (358) had not been attracted to it or, for a variety of reasons, had not seriously considered the field. "I should have considered it probably seriously," says one, "if I had known about it. I might have entered it, if it had been brought to my attention." Another states that he had never heard of a public health school, although he is a "B.A. of Yale and a

M.A. of Columbia." Of the 358 students, 23 per cent indicate by their replies that they had insufficient knowledge of the field. One student thinks that public health work can be performed by any "good bacteriologist or laboratory technician who, with the help of a small office force, can get out a volume of vital statistics per annum." Another says, "I never heard of a school of public health that I would be willing to graduate from. The medical profession does not itself take public health and preventive medicine seriously." A desire for personal contact with patients influenced 18 per cent to choose curative medicine in preference to preventive; 15 per cent objected to public health work because of its frequent contact with politics. "Politics play too large a part not only in obtaining jobs but in prosecuting any project," said one; and another, "Public health work is in the hands of politicians rather than of medical men who are actuated by idealistic motives." The question of salary seems to have influenced a surprisingly small number (9 per cent). "The remuneration for a man who has spent nine or more years in preparation," says one student, "is inadequate in public health." An additional 9 per cent feel that in health work they would not have sufficient independence. One student believes that his initiative would be dulled in government service.

To change the attitude of medical students toward public health work, David L. Edsall of Harvard believes that the sympathetic support of both medical and undergraduate faculties must be won.¹⁹ Large numbers of students are influenced in choosing a career by the advice of their professors. Louis I. Dublin, of the Metropolitan Life Insurance Company, suggests that the wise development of undergraduate courses in hygiene and public health would result in the development of an intelligent public opinion that would support more aggressive health measures,²⁰ but an even more important result, it might be added, would be the

furnishing of accurate information to college students regarding the possibilities of a public health career.

The Public Health Service arranged early in 1923 a series of lectures on the subject, to be given by its officers before university students; and it was also preparing at that time a pamphlet for students which it hoped to distribute widely.

The Training of Sanitarians Now Employed.—This is not only a pressing problem to-day, but it is one which will continue. No man who is worthy of his hire, said Roger Perkins at the Public Health Service conference in March, 1922, will ever feel satisfied with his mental equipment, no matter where he has obtained his preliminary training;²¹ from time to time he will desire short intensive periods of study under leading specialists in new fields and advanced methods.

The yearly conferences of city and county health officers conducted by a number of state departments of health and continuing a few days to a week, stimulating as they may be, are inadequate for purposes of instruction. The Public Health Service conducted in the fall of 1920 a short term venereal disease institute in Washington, covering a period of two weeks, which revealed an eagerness on the part of sanitarians now employed for supplemental education. An attendance of about 150 was expected; the enrollment was over 600. Subsequently, in co-operation with the state departments of health, the Service arranged a series of sixteen institutes at various centers. Courses offered dealt with tuberculosis, child hygiene, nutrition, clinic management, the general communicable diseases, the non-communicable diseases, industrial hygiene, sanitary engineering, administrative problems, mental hygiene, medical social work, syphilis, gonorrhea, protective social measures and the delinquent.²² The attendance ranged from 105 to 1,000. Although inadequate for purposes of thorough training, these institutes evidently met a real need. Brief courses in tuberculosis diagnosis and treatment are available to physi-

cians at Saranac Lake and Colorado Springs, and similar courses were being arranged early in 1923 by several state tuberculosis associations.²³

Other suggestions for the education of partially trained sanitarians made by Perkins include (1) the university course of approximately six weeks' duration, in connection with a school of hygiene or department of preventive medicine and hygiene, and (2) the correspondence course.

Correspondence courses will reach men who cannot leave their positions, but they lack the advantage of personal contact with stimulating instructors, and there is always a stronger tendency to discontinue instruction before the end of the course than when one is enrolled at an educational institution.

So far as short university courses are concerned, for two or three years the School of Hygiene and Public Health of Johns Hopkins University has been offering a six weeks' intensive course for health officers. It was attended by 29 persons in the fall of 1920, by 9 the next year and by 3 the year following.²⁴ This school is not equipped, apparently, to reach large numbers.

The Public Health Service has been considering ways by which it might promote the inauguration of opportunities for intensive study more adequate than the institute of one or two weeks' duration. It is hoped that schools or institutes may be provided comparable to the summer courses of six to eight weeks in other fields offered by many universities.

Tenure and Salaries.—It appears from an examination of the facts regarding the tenure and salaries of state and city health officers that the present status of tenure is far from satisfactory, and that the inadequacy of salary presents, perhaps, an even more fundamental difficulty.

So far as tenure is concerned, in one state, Indiana, a single individual took charge shortly after the organization of the board of health and remained at its head until the fall

of 1922, when he voluntarily resigned. Five states have had only two different health officers since 1900 or earlier. Among city health officers, out of 501 individuals reported upon, 70 held office for more than 10 years. On the other hand, in two states, 9 different individuals held the position of state health officer for the period 1900-1922, and 35 per cent of city health officers, employed in 1922 and reported on, had been employed only two years or less. It must be remembered, however, that all separations from service are not forced by politicians; doubtless many are due to voluntary resignations. Furthermore, when health officers have been forced to resign, in some instances at least they have been physicians without special training in public health work who have carried their health work along with their private practice. Even so, the tenure situation is bad. Uncertainty of tenure keeps good men out of office; it tends to prevent the inauguration of effective programs of health measures; and forced resignations sometimes cut short the development of well conceived and effective programs.²⁵

In contrast to the unfavorable conditions in many cities, it is heartening to observe the attitude of the city of Savannah, Georgia. It recently advertised for a health commissioner at a salary of \$4,800 a year, with an automobile for official business and the privilege of retiring on a pension after a certain term of service. Furthermore, "the city of Savannah guarantees the position of health officer free from political interference." The New York State Department of Health believes that this incident must be symptomatic. "Let Savannah's light so shine before all the cities of the land," the Department writes editorially, "that those which still permit politics to dominate their public health services may be led to pause and consider and change their ways." ^{25a}

It is said that public health work must be taken out of politics; and in one sense this is true. A type of work which

requires a high degree of technical training is hopelessly handicapped if it is treated as the spoils of a political boss or a victorious party machine. "Yet in another, the original, meaning of politics," says George E. Vincent, "public health ought to be always in politics. The safeguarding of the health of the people is a community task and responsibility. . . . Officials are in duty bound to present their programs and budgets to boards, councils, and the public, and to give convincing reasons for the measures and expenditures that are proposed. . . . The hookworm campaigns of the International Health Board, for example, are always preceded by systematic education of the community in the cause, effects, cure, and prevention of the disease. Only when people understand the purpose and methods of public health measures can they be counted upon to co-operate willingly and effectively." ²⁶ When public-spirited citizens, the schools, the press, chambers of commerce, women's clubs, social agencies, and voluntary health associations are wholeheartedly behind the health officer, there will be little disposition on the part of the wrong kind of politicians to interfere with effective administration.

If adequate salaries were offered, and trained sanitarians with administrative experience employed, in many instances they would produce such valuable results and win such widespread approval that public officials would have neither the desire nor the temerity to discharge them. This would not be true in all instances—for in recent years politicians have brought about some most unfortunate changes in important positions in public health work—but as the people become more and more interested in the social aspects of preventive medicine, to an increasing degree competent sanitarians and public health officials will have the support of the people and of political administrations.

The tendency now is to provide for the appointment of health officers by boards of health, only a part of whose membership is subject to displacement with any one change

in political administration. Among the largest cities of the country, some executive positions and most subordinate positions are now under civil service, and the number is increasing. In cities with a commission form of government or with a city manager, however, the custom is to make the commission or manager wholly responsible for the employment of an efficient health executive. Several state health officers suggest the extension of the civil service to include at least minor positions in state boards of health.

The problem of salaries presents a serious difficulty. The short terms of many health officers may be due largely to the inability of the incumbent to give for any considerable number of years the time which the office requires at the low salary paid. One state in 1922 paid its executive health officer \$1,000 per annum, and seven others, \$2,000 to and including \$3,000. The average salary for 1922 was \$4,453. Yet in the opinion of the Committee on Salary Standards of the American Public Health Association, the *minimum* for a state health officer should be \$5,000. Among cities of more than 100,000 population, one paid its full-time health officer, in 1922, \$1,724; two, on the other hand, paid a salary of \$10,000 a year. The average for 72 cities of more than 100,000 population, most of them employing full-time officers, was \$4,188.* For cities of 100,000 and over, also, the Committee on Salary Standards fixed \$5,000 as a minimum salary for a properly qualified full-time health officer.²⁷ Salaries in the United States Public Health Service range from a minimum of approximately \$2,740 a year for an assistant surgeon, (a majority of assistant surgeons, however, receive about \$3,200) to \$7,500 for the Surgeon General,²⁸ depending upon length of service and amount of commutation.

The unfairness of the salaries paid to sanitarians occupying official positions in the United States is suggested by the graph on the opposite page, (Figure 70);²⁹ it may be

* See page 229.

seen that higher salaries are paid in far less skilled occupations. Also in certain other kinds of public health positions larger compensations are provided. An advertisement was recently published in England inviting medical men to apply for appointments in the Ministry of Health at salaries of £1,000, rising to £1,400, per annum, together with pension

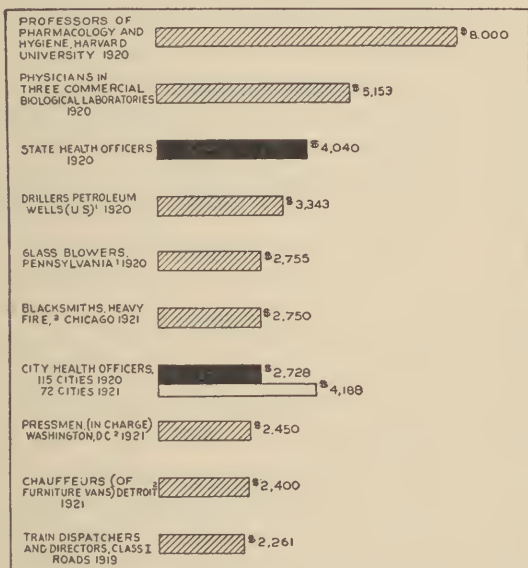


FIG. 70.—AVERAGE SALARIES AND WAGES OF CERTAIN EMPLOYMENTS COMPARED WITH THOSE OF STATE AND CITY HEALTH OFFICERS.

¹ Period of employment estimated as equivalent of 40 full weeks.

² Only union wages considered.

rights and other privileges ³⁰—amounts higher than those paid in a large majority of official positions in this country. Industrial concerns, recognizing the importance of well-trained sanitarians for health service, appear to pay, on an average, considerably more than do the states and municipalities. One firm pays \$15,000, a sum greater than any

salary provided by the federal government or by any state or municipality.³¹

There are advantages which offset these temporary unattractive aspects of public health work. To the sanitarian may come the "consciousness of a reward for labor, fuller and more immediate than that earned in many walks of life," says C.-E. A. Winslow, "for he knows that in a given city in a given year so many hundreds and thousands of men and women and children are alive and well who would have been in their graves except for him."³²

"Students should know that the sanitarian's influence," writes John A. Ferrell, of the International Health Board, "extends to hundreds, thousands, and even millions who by virtue of his efforts may escape or indefinitely postpone the necessity for curative or repair treatment at the hands of the clinician. He is a wholesaler employed in the service of his country in the conservation of its greatest asset—good health. The results of preventive medicine to the community are and always will be, therefore, vastly greater and more beneficial than any results that might be realized from the treatment of the sick."³³

George E. Vincent emphasizes the importance of informing medical students regarding the dignified professional status already achieved by the field of public health. He believes that "the salary received by a health officer of full rank probably exceeds the income of the average private practitioner. Private practice has many disadvantages; excessive overtime and night work, poor collections, the necessity of dunning patients, little chance to study, constant economic pressure, a heavy burden of unpaid service, competition with quacks and charlatans, temptation to surrender scientific ideals. Public health service, on the other hand, is making a strong appeal to many men and women of imagination, courage, and social spirit just because it does not involve most of these things and offers many positive attractions."³⁴

A careful study of the problem of personnel and salaries shows that one fundamental need to-day is the education of legislative and administrative officers of municipal, state, and federal governments and of the people generally to an appreciation of the far-reaching importance of public health work. Their aid is essential to the establishment of higher professional standards in the selection of sanitarians for all positions in the public health field. When such standards are created, adequate salaries with assured tenure will be offered; then and then only will the best physicians now in private practice be ready to enter the field of public health; then and then only will our brightest young men and women be willing properly to train themselves for public health as a life career.

CHAPTER XX

PUBLIC ECONOMY AND PUBLIC HEALTH

As these lines are being written, thousands of newspapers are informing millions of readers of the accidental death in a Pennsylvania coal mine of seventy-six or more miners. But even while the people are reading the tragic news, dramatically related, other miners and carpenters and merchants and lawyers, and men, women, and children of all kinds are dying of preventable or postponable diseases at the rate of over sixty per hour, every hour of the day and every day of the year.¹ Disasters such as mine explosions arouse popular sympathy and widespread remonstrance; they result in a demand for more careful inspection, for the purchase of safety devices and for other preventive measures, regardless of cost. The needless death of hundreds of persons every day under less dramatic conditions has become so commonplace that few are moved to protest—to demand that adequate preventive measures be inaugurated and that sufficient funds be provided to make such measures possible. The conquest of disease is largely a matter of available money. The appalling waste of human life in the United States, discussed in earlier chapters, will continue until this fact is understood by the appropriating bodies of local, state, and federal governments.

The Meagerness of Health Appropriations.—The dearth of trained men, the curtailment of scientific research, the scarcity of educational materials, the lack of dispensaries and other equipment are due largely to the meagerness of appropriations for official health agencies. The amounts

appropriated for the health activities of various units of government will be briefly discussed.

For County Health Work.—For several years the federal government has appropriated approximately \$100,000,000 annually for the construction of rural post roads,² with the provision that each state accepting its allotment of this fund appropriate a like amount. But a similar plan for the development of rural health work in co-operation with the states provides for an appropriation of only \$50,000 a year.³ (See Figure 71.) Although the money has been used so effectively that it has stimulated the expenditure by county and state governments of amounts five or six times as large as the federal fund, it has appeared impossible to have the subsidy for health work increased. Only 231 of the 2,850 rural counties of the United States were equipped in 1922 with full-time county health officers (although in a few additional counties there were full-time public health nurses), yet the amount of money expended for a single mile of paved highway⁴ would provide a county with a health officer, a sanitary inspector, and one public health nurse for an entire year, and there would be money left over for other expenses. No thoughtful sanitarian would begrudge the money used for good roads—he knows they bring the farmer into closer touch with the rural physician and nurse. He would not have less spent for roads, but he would have more spent for health work.

Although it may not be generally known, the federal government assists the states in the maintenance of the National Guard. The amount appropriated for such aid for the year 1923-24 was approximately \$29,800,000. If only one half of this money were available for rural health work and if it were matched by states and counties acting jointly, it would be possible to place a full-time health officer at \$4,500 per year and a public health nurse at \$2,500, with an expense fund of over \$3,000, in each of the 2,850 rural counties. The same thing might be done if only 3 per cent



FIG. 71.—AMOUNTS PROVIDED BY THE 1923-24 FEDERAL BUDGET FOR RURAL POST ROADS AND RURAL HEALTH WORK.

of the total amount provided for the Army and Navy for the same year, were available.⁵

*For Municipal Health Departments.*⁶—During 1921, 183 of the 253 cities of the United States having a population of over 30,000 expended for all municipal activities, \$873,-385,081. Only \$20,475,626—less than 2½ per cent of this amount—was used for the “conservation of health.” (See

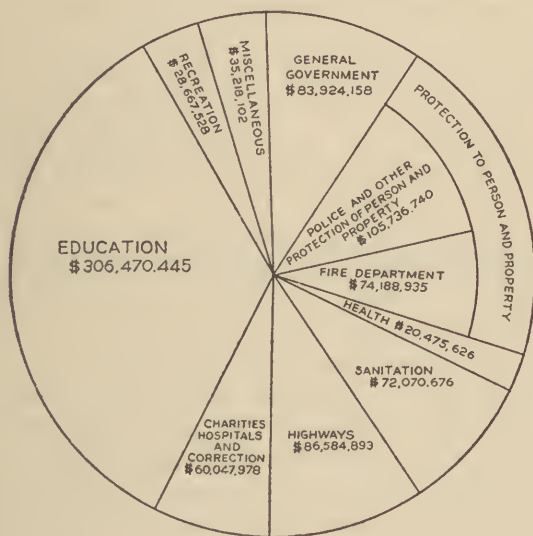


FIG. 72.—AMOUNTS EXPENDED BY 187 LARGE CITIES OF THE UNITED STATES IN 1921 FOR VARIOUS PURPOSES.

Figure 72.) This term (as defined by the Bureau of the Census, which compiled these figures) includes health administration, vital statistics, prevention and treatment of communicable diseases, conservation of child life, food regulation and inspection. A somewhat larger amount, it will be observed from the graph, was appropriated for “sanitation or the promotion of cleanliness” (which in some cities comes under the jurisdiction of the department of health),

including sewers (their construction presumably) and sewage disposal, street cleaning, other refuse collection and disposal, public convenience stations, other sanitation or promotion of cleanliness. The total of these two amounts, however, is less than the sum expended for police and other "protection to person and property" (not including fire protection). Only a little more was spent on sanitation and health combined than on highways.

For State Health Departments.—In 1916, about five million dollars was appropriated by all the states to their departments of health,⁷ but, the year previous, over 45 million dollars⁸ was used for the maintenance of subsidized institutions for the insane, epileptic, tuberculous, leprous, blind, deaf, deformed, and feebleminded.⁹ The hospitals for the insane provided care for only 199,000 patients, when, it will be remembered, there are in the country at least 350,000 insane persons who ought to have hospital care. In 1922, all the states were expending for public health work about 11½ million dollars; and at that time the institutional care of the defective and sick was costing about 60 to 75 million dollars (the exact figures are not available). Although the former amount does not include what is spent by municipalities within the various states, it would seem desirable, merely from the standpoint of economy, for the states to spend more money for prevention, at least for the prevention of tuberculosis, insanity, and other disorders and defects which are so expensive to the commonwealth. The graph (Figure 73) shows the relation of the amount spent by the states for public health to the amount paid for the institutional care of the sick and defective.

For Federal Health Activities.—A graph prepared by the Bureau of the Budget¹⁰ (Figure 48)* shows that only 4-10 of 1 per cent of the total amount provided by the 1923-24 budget was for the promotion of public health by all agencies

* See page 216.

of the federal government. Figure 74 compares in terms of dollars the estimated expenditures for public health with estimates for other governmental agencies and activities.¹¹ The annual appropriations to the United States Public Health Service are pitifully inadequate. "Congress with rare vision," says the *Journal of the American Medical Association*,¹² "established some twenty years ago the Hygienic Laboratory of the United States Public Health Service. The Staff has included some of the foremost repre-

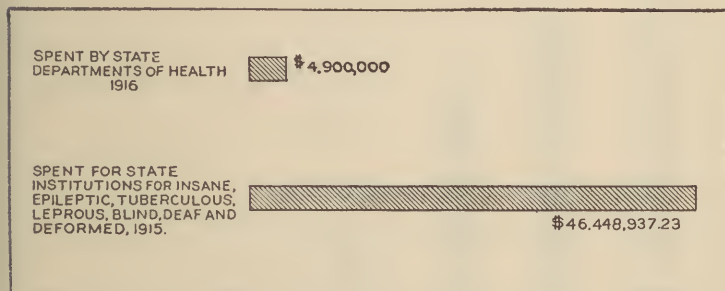


FIG. 73.—AMOUNTS EXPENDED BY THE PEOPLE OF ALL THE STATES THROUGH THEIR STATE GOVERNMENTS FOR HEALTH WORK AND FOR THE CARE OF DEFECTIVE PERSONS IN INSTITUTIONS.

sentatives of chemistry, pharmacology, bacteriology, and medical zoölogy, the specialties most needed for a co-operative attack on the great problems of health in the country. But subsequent Congresses have failed to provide for any considerable growth of this laboratory. . . . The people of this country spend \$500,000,000* a year on drugs, in addition to other large sums for other means of obtaining relief from suffering and disease. Would it not 'pay' to spend a million or two a year to determine whether this great drug bill could not be reduced by the discovery of better, fewer

* This estimate of the American Medical Association is a little larger than that given on page 66 (Chap. V.), and used also in the next paragraph.

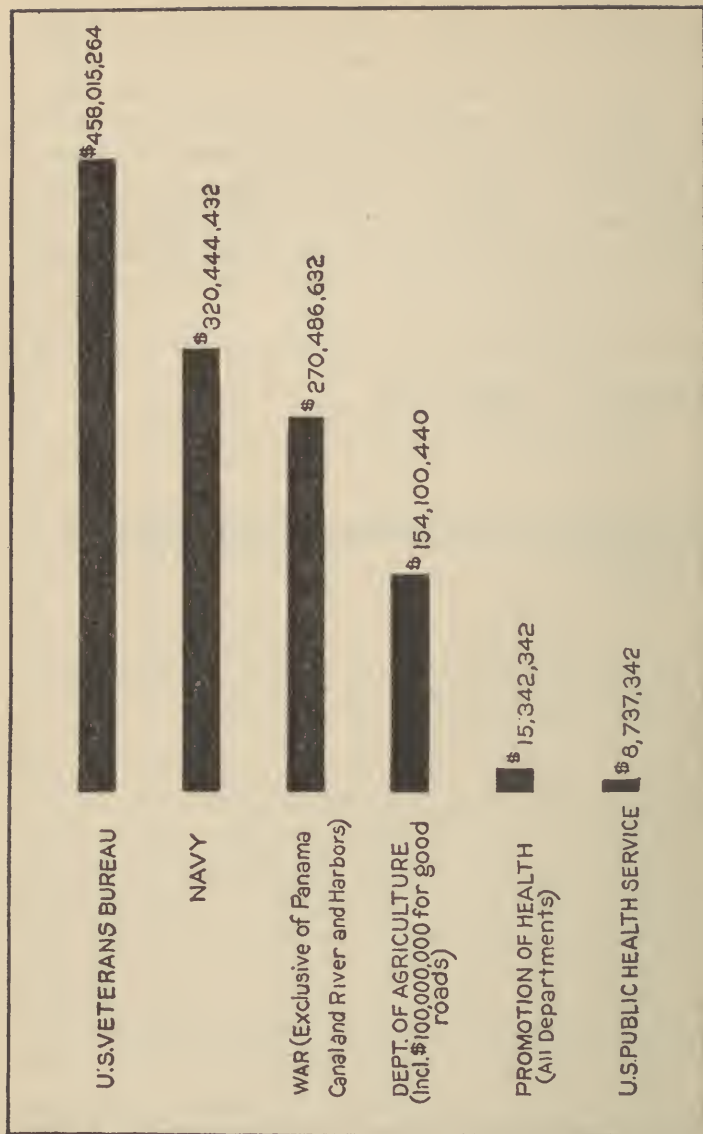


FIG. 74.—AMOUNTS PROVIDED BY THE FEDERAL BUDGET, 1923-24, FOR VARIOUS DEPARTMENTS AND BUREAUS OF THE FEDERAL GOVERNMENT.

and cheaper drugs as well as of other means of preventing disease and of obtaining relief from pain?"

The General Meagerness of Funds Now Available.—The total expended by all official agencies for the public health work in 1922 was about 60 millions of dollars, as may be seen in the following table, which shows the approximate expenditures by all official health agencies for the three years ending 1922: ¹³

	1920	1921	1922
States ¹⁴	\$10,000,000	\$11,000,000	\$11,500,000
Cities ¹⁵	20,000,000	28,000,000	28,000,000
Rural ¹⁶	5,000,000	5,000,000	5,000,000
Federal ¹⁷	25,000,000	21,000,000	15,000,000
Totals	\$60,000,000	\$65,000,000	\$59,500,000

At the same time the people of the United States were spending over 1,000 millions a year for hospital service, physicians, healers and nurses, and, in addition, about 350 millions for drugs—a total of approximately 1,400 millions of dollars, to say nothing about the cost of premature death and the loss in time and efficiency caused by disease. ¹⁸ (See Figure 22.)* And it should be remembered that most physicians, healers, and nurses are engaged in curing diseases which efficient health work might have prevented, and that much of the medicine purchased is worse than useless.

The appropriating bodies of county, municipal, state, and federal governments are demanding that appropriations for public health be kept down, because taxes have become so high as to be a burden to the people. In the light of the data set forth in the preceding pages, however, such an excuse for not adequately supporting health work seems hardly valid. So exceedingly small is the percentage of public funds spent in the United States for health activities that to double or treble the amount would make hardly a perceptible difference in the tax bill. Furthermore, a small

* Page 68.

increase now in expenditures for health work would tend to reduce future taxes for the upkeep of various state institutions.

Surely a nation rich enough to spend over 1,800 million dollars a year on tobacco (see Figure 75) and 800 millions

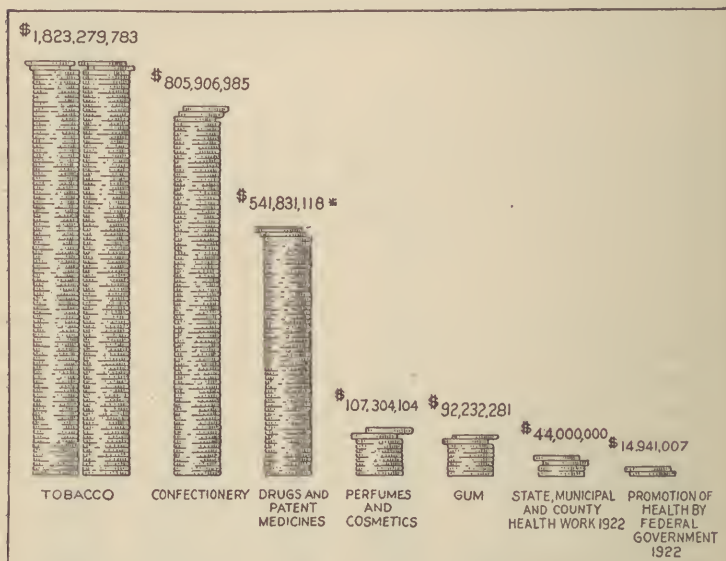


FIG. 75.—ESTIMATED AMOUNTS OF MONEY SPENT BY THE PEOPLE OF THE UNITED STATES DURING ONE YEAR (IN 1919, EXCEPT WHEN OTHERWISE INDICATED) FOR VARIOUS PURPOSES.

The five amounts at the left were obtained by adding to the "value at factory" 80 per cent for freight and express, advertising, profit of jobbers, profit of retailers and other costs of marketing.

* This amount is larger than that used in Chap. V., page 66 (\$345,000,000), the amount in the graph being for 1919, and the other for 1921.

Figure 43 (page 169), gives only the cost of medicines for sale to the public in unbroken packages.

on confectionery would be willing (were the people persuaded to reflect upon the situation) to spend more than a paltry 60 million per year on its official health agencies. The most that can be said about chewing gum is that it probably does not do much harm; some physiologists believe

that it has a detrimental effect on the digestive processes. Yet the people of the United States are paying each year more money for chewing gum than they appropriate through legislative bodies to all official agencies for public health activities. What will future generations say when they contemplate this fact, and when they observe that we are now spending even more for perfumery and cosmetics?¹⁹

The tax alone on candy, collected by the federal government for 1921, if used for public health purposes, would have made available a considerably larger amount than was allotted by the 1923-24 federal budget for the promotion of public health by all departments of the government.²⁰ If for the purpose of waging a more vigorous attack on disease, cigarettes were taxed just a trifle more than they are now (\$3.60 per thousand, instead of \$3.00 as at present) and other kinds of tobacco proportionately, it would be possible almost to double the amount now available for the health work of local, state, and federal agencies combined.²¹

The Economic Profitableness of Health Work.—Throughout the earlier chapters of this brief outline, evidence has been presented indicating that disease costs the nation vast sums of money, that preventive measures definitely and promptly reduce both the amount of sickness and the number of deaths; and it has been obvious in many instances that such reductions result specifically in the saving of money.

Certain sections of Virginia, in 1904, showed a hookworm infection of nearly 100 per cent among the school children, and a considerable percentage of adults were pallid, anemic and sick. "Thanks to the State Board of Health," recently wrote a physician practicing in these sections, "these same people are now healthy, prosperous and happy. I know of several families of prosperous farmers that are now enjoying touring cars of their own who, a few years ago, on account of hookworm, were more or less dependent on charity."²²

When a man pays a physician \$50 to attend over a period of a year various members of his family who suffer from malaria, and then, after paying only \$1 extra on his tax bill* for the inauguration of a program of malaria control measures, he finds that he has not had to call a doctor for twelve months on account of this disease—after such an experience, not uncommon in the South, there is no question in one's mind regarding the profitability of at least this type of public health work.

The Metropolitan Life Insurance Company found that among its industrial policy holders there were 55,000 fewer deaths in 1921 than there would have been had the 1911 death rate prevailed. It believes that "a very great factor" in this tremendous saving of human life was the "health campaign carried on by the Metropolitan itself." In 1922, 52,000 fewer policy holders died than would have died under the 1911 death rate. This meant a saving of \$11,828,743 in death claims during 1922. It was profitable to the company in 1922 to distribute over 33,000,000 booklets and circulars on health subjects; to show its health exhibit 265 times at county fairs and other expositions; to co-operate in conducting 440 "clean-up" campaigns and 161 campaigns for the construction of tuberculosis hospitals, water supplies and sewers, for the extermination of flies and for the checking up of various epidemics; and to send its trained nurses on 2,687,169 visits to policy holders. In addition, it appears to have been "good business" for this company to spend thousands of dollars in health publicity among the leading magazines of the country.²³

It has been profitable, as has been seen, for many industries in the United States to invest \$2 to \$11 per employee, per annum, for health service.† When absenteeism and accidents are reduced, dollars are actually saved. One firm,

* The cost of malaria control measures is discussed on page 124.

† The investment of money for health service in industry is discussed on page 319.

it will be remembered, made a net saving within a year of over \$40,000 by establishing a health service. The medical department of another establishment saved the organization in 1920 more than \$69,000.²⁴

The main purpose of public health work is not to save money, but to make possible for all the people the freer, fuller, more buoyant life; we must have health work regardless of its cost. But it is desirable to point out in passing that a public health program "pays" from the standpoint of saving money; and that, in many instances, it would be profitable from this point of view alone for local, state, and federal governments to double or treble their appropriations.

The achievements of the past fifty years in preventing smallpox, yellow fever, malaria, bubonic plague, typhoid fever, and hookworm disease; in reducing the mortality due to diphtheria; in lowering the general and the infant death rates and increasing the span of life, give strong support to the hope that tuberculosis, syphilis and gonorrhea, influenza, poliomyelitis, the mental diseases, pneumonia, cancer, and diseases of the heart and kidneys may also be greatly reduced. This consummation, devoutly to be wished for, may be achieved if federal, state, and local governments are willing to spend the necessary money. "Within natural limitations any community can determine its own death rate," affirms and reiterates the New York State Department of Health; and, what is as important, money will buy health and make possible a higher degree of efficiency and joy in living.

CHAPTER XXI

PROSPECTS OF A FORWARD MOVEMENT

AN inventor is reported to have brought to Washington, shortly after the war, an instrument which he claimed would make the United States the foremost military power of the world. "I have a device," he asserted, "with which I could wreck New York City in five minutes, send its tallest towers toppling into the Hudson, and leave its busy streets a trackless mass of *débris*." However exaggerated his claims may have been, they illustrate the direction in which many of our scientists have applied their inventive genius. Before the World War, men used relatively crude devices for killing each other—first the thrown stone, then the javelin and the arrow, later the simple bullet and solid ball. Now chemistry and electricity have revolutionized warfare. The World War attracted the highest inventive genius. During its first five months the British Admiralty received 6,000 offers of new scientific devices. An American chemist from one of the leading universities, in the service of the government during the war, invented a poison having many times the killing power of the most deadly gas previously used. Another scientist devised an airplane which could be guided by radio. Thus airplanes loaded with this gas might steal close to the enemy's line and release a sufficient quantity to annihilate whole divisions.¹

Bacteriology, chemistry, and other sciences have begun to revolutionize the field of medicine. Could the organizing ability and inventive genius—eagerly contributed and mobilized during the war, and still utilized, for destructive pur-

poses—be made available for leadership in the great task of building up the public health, the staggering waste of human life in the United States might be stopped and the health of the nation be immeasurably improved. The people appear ready for a great, organized advance on the forces of ill health. The achievement of an effective offensive depends upon the ability of the nation to produce the necessary leadership.

Successes Achieved and Tasks Remaining.—During a remarkably short period of time the average length of life in the United States has been considerably extended; infant mortality has been greatly reduced; yellow fever and bubonic plague have been virtually eliminated; typhoid fever and smallpox have been enormously curtailed. Malaria and hookworm disease are rapidly giving ground and the fear of diphtheria has been largely allayed. Although the practice of quackery and the sale of harmful nostrums may not be greatly decreasing, people are taking advantage of dispensaries, and in other ways are exercising more intelligence in the treatment of disease. Furthermore, social conditions affecting health have greatly improved—fewer children are employed in industry, women are working shorter hours, the conditions of labor are definitely growing better, prostitution is apparently being reduced, and improved housing is coming with the advance of sanitary science. Various special efforts—school health work, public health nursing, health service in industry, physical education, and recreation—are making conspicuous steps forward. The people of the country are co-operative, and there are many indications that the nation is on the eve of a great, organized advance towards the elimination of preventable diseases and the development of finer and higher standards of living.

But this is only part of the story. Although the infant mortality rate has been dropping, more babies are dying each year (most of them needlessly) than there were American soldiers killed in the World War; little or no progress has

been made in reducing the maternity death rate. Although health authorities have succeeded in reducing many infections, others appear to have secured a stronger hold. A great epidemic of influenza has but recently swept the country, taking its toll of hundreds of thousands, without leaving sanitarians any wiser regarding its control. Tuberculosis still kills its thousands and costs the nation five to eight hundred million dollars a year. Pellagra and hookworm disease, treacherous allies of poverty, still menace a large proportion of the people of one great section of the country. Syphilis and gonorrhea impose a heavy toll on the young, destroy fertility, deform babies, and wreck homes. Pneumonia remains unconquered and cuts short the lives of thousands in their prime. There are over one third of a million persons mentally diseased, and probably a larger number who are feeble-minded. Although facilities for their proper care are inadequate, institutions now available for the mentally diseased alone are costing the nation, for maintenance, over sixty millions per annum. In prisons, jails, and reformatories at all times are over 150,000 persons, whose crime or delinquency, in a large proportion of cases, is due to mental abnormalities. Cancer still baffles the skill of scientists; and diseases of the kidneys, heart, and arteries are cutting short the most profitable years of multitudes of our citizens. Human life in the United States is wasted quite as recklessly and continuously, quite as surely in peace as in war. For the hundreds who are suffering from disabling diseases, thousands are going about their various occupations with depressed vitality and are living on a low plane of health without the satisfactions and joys of work and recreation, because of common colds, constipation, headaches, rheumatism, and other minor ailments. Let anyone look about and observe. A half dozen friends are suffering from hard colds, a married sister's little girl has scarlet fever, an aunt is a chronic invalid, and a child across the street is low with diphtheria. Within the family, a little son suffers

from a persistent cough, an older daughter from nervousness, the wife from chronic headaches. A letter comes from a friend in Florida who had a nervous breakdown months ago. Down the street a few doors, a funeral cuts short the career of a brilliant young woman who had needlessly died in childbirth. A large proportion of one's acquaintances, friends, and relatives have not achieved the degree of health that lifts life above discomfort and drugdery. Recently a few municipalities have begun to employ trained health officers at adequate salaries, but others are maintaining inefficient heads of health departments at compensations less than those earned by many blacksmiths, glass blowers, and well drillers; and less than 250 of our 2,850 rural counties are manned by even one full-time health officer. Disabling illnesses are costing the nation nearly two billion dollars annually, decreased efficiency due to minor ailments mounts up to approximately 1,500 millions each year, medicines cost 350 millions annually, and the loss due to premature death is over a billion, making a vast incomprehensible annual loss, a very large proportion of which might be saved through the systematic application of knowledge already acquired and by the further development of the science of preventive medicine.²

The Support of the People.—Such limited successes as have been achieved in the nation's warfare against disease have been due partially to the more or less arbitrary application by the authorities of technical measures, without the people's co-operation, and partially to their hearty and increasingly intelligent support. Evidence of the rapidly growing interest of the people is found at every hand. Articles on disease and health are appearing in newspapers, popular magazines, news journals, and general scientific publications. In a single issue of a recent news weekly reaching over a million persons is an article advocating the periodic examination, another on the common cold, and still another, with quotations from the *Journal of the American*

Medical Association, on the food value of cod liver oil.³ Another weekly magazine has recently run a series of health articles by a well-known journalist.⁴ These are only a few of the many to be discovered almost any month.

Naturally this interest of the people in their health has been extensively exploited. Headlines of a prominent daily inform us that an association of restaurant men are out to guard the health of the people, and a breakfast food bulletin urges that food is the "key to health." In a well-known women's magazine, a full-page advertisement of a health society's course of study asserts that "the first fundamental of happiness is health." Another large advertisement states that a certain soap "is the master valve to each tiny health radiator of your skin"; and a great baking company pays a large sum of money for advertising space in New York papers to assure the public that it now has a bread with the proper elements of nutrition. A prominent engineer at a banquet states that sanitation is the foundation of civilization. For the development of a "good health week campaign," a soap manufacturing concern employed a publicity man who opened a promotion bureau for this special purpose; during "good health week," sanitation, personal hygiene and ventilation were to be advocated. It is unfortunate that the exploitation of health is not confined to the activities of legitimate commercial agencies. One publishing house in 1923 was issuing at least three magazines containing much harmful material on health, one of which alone was selling at the rate of approximately 225,000 copies per month; and the people of the United States are spending, it will be remembered, approximately \$200,000,000 a year on drugs for self-treatment, most of them worse than useless.

The complaint has been made that, although people are interested in public health, their concern is primarily in their own individual condition—that they are only selfishly concerned. This somewhat pessimistic view is not well sup-

ported by the evidence. In fact, it appears from the observations of recent years that the interest of the people in the social aspects of health is progressing almost more rapidly than that of physicians. Victor C. Vaughan said in 1915, in his presidential remarks⁵ before the American Medical Association, that "many of the more intelligent of the laity know much more about preventable diseases than some of our doctors." Too frequently when physicians hold back and when health organizations are inactive through lack of personnel and money, the people's interest is exploited by commercial enterprises and misguided enthusiasts; but in many instances civic organizations assume the leadership—often they are more enthusiastic about some public health enterprise than the physicians of the community.

The concern of the people, particularly leaders of public opinion, in the *social* aspects of health work is shown by the subjects dealt with in magazines and other publications devoted primarily to neither medicine nor health. The *Woman's Home Companion* published in the summer of 1922 a series of articles on group medicine; it also issues a number of public health pamphlets. The Chamber of Commerce of the United States publishes a series of bulletins on civic problems, and in one of them⁶ urges the development of physical training. "The conservation of health is a great economic problem challenging the best thought in America to-day," it says. "The times demand men and women who can stand the strain of the most trying commercial and industrial conditions the world has known. . . . The economic gain to our nation through proper attention to physical fitness will be incalculable." Magazine articles represent interests of wide range. The *New Republic* expresses gratification at the progress in public health nursing anticipated by the report on nursing education; the *National Geographic Magazine* and *Current History* deal with the international aspects of public health in recent articles; and not long ago *Leslie's Weekly* conducted over

a period of several weeks a vigorous attack on chiropractors, while the *Atlantic Monthly* offered a more restrained article on "Osteopathy, Chiropractic, and the Practice of Medicine."

Professor Julius Stieglitz, head of the Department of Chemistry of the University of Chicago, in an interview published in April, 1923, by *Colliers Weekly* magazine, expressed a belief that the chemists of the United States are in a position to contribute greatly to the advancement of public health, were they organized for an all-around campaign against disease and death as they were organized for destructive purposes during the war. "There is no institution in which the chemists of the United States can come together with the medical scientists to inaugurate a general attack upon the forces that kill," he stated. "Let there be another war and no doubt the chemists would be mobilized again. But they would be mobilized to kill. . . . No one can say whether chemical science will be employed for this purpose or the other. We can only say that it is available. It may be mobilized to wage war, or it may be mobilized to secure a longer, more interesting, and more abundant life for all." 7

The editor of the *Review of Reviews* has shown a personal interest in various aspects of public health. Following a brief statement of the work of Emil Coué, in the December, 1922, issue, he sets forth, in a twelve-page article,⁹ a summary of the opinions of some twenty or more psychiatrists and others on the methods used in the New Jersey State Hospital for the treatment of mental disorders. Earlier in the April number, an article had appeared on "The Winning Fight Against Mental Disease." It had been widely read, and appears to have had a marked effect on public opinion regarding the conduct of state institutions. The interest of the editor in the subject led him to request the opinions of various professional men regarding the possibility of reducing the prevalence of mental disorders through the application of measures used in the New Jersey

institution. In the December number of the magazine were published the results of his inquiry.

Albert Shaw, the author, so far as has been found, has no connection with medical or health organizations, yet as a student of political science and as an editor, he urges that greatly enlarged emphasis be placed upon public health work. The article continues: "The efforts of the medical profession should everywhere be diverted in an increasing ratio from the private treatment of individual cases of disease to a systematic attack on ill health from the social and public standpoint."

The editor of the *Century Magazine*, Glenn Frank, pleads for a comprehensive national health program⁸ which would "insure to every man, woman, and child in the United States the full and continuous benefits of the best in medical science and service." "Why can we not harness the power of the reforming instinct that achieved prohibition," he asks, "to the broader and more important issue of a national health army, a national health program, and a national health organization in which all doctors should be servants of the state with all or a basic part of their income guaranteed?" Under present arrangements, he suggests, we have no guarantee that doctors will be wisely and strategically located. Now they have a "vested interest in ill health instead of a vested interest in good health." "Our national motto seems to be, Millions for pills, but not one cent for preventive advice." He continues:

With such an organization in operation we could really launch a national war on disease, not only on the manifestations of disease, but on the causes of disease. Here, if anywhere, we could find that "moral equivalent of war" for which the race is searching. Gorgas trailing yellow fever to its endemic home entered upon as thrilling and as adventurous an undertaking as any conceivable military campaign. A national health army would face just as thrilling and colorful an undertaking in the United States—an undertaking that would absorb that fighting instinct which cynics like to say will make war an eternal practice of the race.

Not only are the intelligent people of the country talking and writing a great deal about the social aspects of health, they are promoting definite programs of health activities. A local Lions Club in Illinois launched a few months ago a city-wide anti-rat campaign.¹⁰ The Chamber of Commerce of the United States has established an office for the sole purpose of developing health programs among affiliated local chambers of commerce and similar organizations throughout the country. The General Federation of Women's Clubs has a public health department with divisions of child hygiene, social hygiene, tuberculosis, educational hygiene, and public health nursing, each in charge of a chairman; and the League of Women Voters is especially active in the promotion of health legislation. Other great national agencies have their health committees. Not content with taxing themselves for the care of deformed children in this country, the Rotary Clubs have launched an International Society for Crippled Children. They recently promoted a "health week" also, among the local clubs of this and other countries. The Mystic Shriners are making available millions of dollars for the building of orthopedic hospitals for children. Impressed by the ravages of habit-forming drugs, hundreds of local lodges of the Benevolent and Protective Order of Elks have insisted that something be done to eradicate this evil; many other non-medical agencies have been active in urging the control of drug addiction; a large number of resolutions were received by Congress approving the Joint Resolution dealing with the limitation of the production of drugs, as well as 50,000 individual letters of endorsement.¹¹ The Kiwanians decided, in April, 1922, on a program of activities in behalf of under-privileged children, including measures for the mentally defective, the diseased, and the undernourished.¹² In a multitude of ways the people of the United States have shown themselves ready for a great forward movement in man's eternal warfare on disease.

With a record of successful achievement and with the hearty support of the people, why do not the health authorities of these United States inaugurate a great, thoroughly organized attack on those disease enemies which still kill men off before their time, which disable their thousands, and which enslave their millions on low planes of depressed vitality? Two reasons why such an attack has not been launched—scarcity of trained personnel and inadequacy of funds—have already been considered. Another reason, more fundamental from some points of view, is lack of centralized leadership.

Types of Leadership Proposed.—Great Britain, Canada, New Zealand, France, Czecho-Slovakia, and Poland have ministers or departments of health.¹³ The form of government established by the United States Constitution, however, does not provide for the high degree of centralized control in public health administration which is found in these other countries. Largely because of this fact, the Public Health Service has refrained from aggressive guidance in health affairs. No other national agency has felt called upon to assume such leadership; or, to be more accurate, numerous organizations have come upon the field, each assuming considerable active leadership in respect to a single disease problem or some single phase of public health work. Thus a tremendous amount of effort has remained uncoordinated. The time has now come when health officers must consider whether it is not practicable to devise some plan for centralized leadership which will not result in the usurpation of the powers assured the states by the federal Constitution. Various alternatives should be weighed.

It might be possible for state departments of health, with the aid either of larger appropriations or of federal subsidies granted under liberal terms, widely to extend their activities, under their own guiding influence. Were a definite, nation-wide development of this nature to take place,

certain state departments of health might soon advance to positions of prestige among the less active state departments; and were this influence definitely exercised, a general advance would be possible. If more centralized leadership than the federal government now exercises seems essential, it might then be provided by a more active organization of the executive officers of state departments of health than now exists.

Consideration should be given also to the possibility of depending upon more leadership from the private national health organizations. They have already done pioneer work of immense value in the fields of tuberculosis, social hygiene, cancer control, child hygiene, hookworm disease eradication, and public health nursing. Brought more closely together in some such organization as the National Health Council, they might become exceedingly effective in the development of a nation-wide forward movement. Why not more definitely recognize this existing leadership and urge more adequate support to these organizations?

Finally, the many demands for a higher degree of leadership on the part of the federal government must be considered. Since 1875, the establishment of a department of public health has been frequently proposed. Scores of bills providing for such a department have been introduced in Congress. In 1910, Senator Owen introduced a bill supported by the Committee of One Hundred on National Health of the American Association for the Advancement of Science which provided for the creation of a federal department of health. It was believed that the various bureaus of the government dealing with health problems might work more effectively if they were united, that more rapid progress might be possible in the conquest of epidemic diseases, and that a successful campaign against nostrums and quackery might then be waged. The principles of the bill were heartily approved by the American Medical Association and by a multitude of other organizations; and the movement had also won the support, states the New York

Times, of the entire press of the United States.¹⁴ In opposition to this measure an enormous amount of propaganda developed, originated by the National League of Medical Freedom. It was charged that those back of the movement were allied with a "doctor's trust."¹⁵ Large advertisements appeared in newspapers throughout the country, urging the people to write to their congressmen protesting against the passage of the "Owen bill." The opposition was effective.

In October, 1917, a few months after the United States entered the war against Germany, the American Public Health Association meeting in Washington adopted a resolution calling upon the President to bring about "such development of the Public Health Service as will provide a national program for the co-ordination and direction of the efforts of all local, state, and national health agencies along the most effective lines, and will bring home to the whole country the importance of health protection, and to each individual the rôle he must play in order to maintain his own health and that of the community."¹⁶

A few weeks later a committee of leading sanitarians called upon President Woodrow Wilson to urge the creation of a department of health. "We need the physician in your cabinet, a Minister of Health," states a memorandum presented to the President. "Let such a national health leader be granted power to weld into use for prevention and relief the private and official physicians, nurses, hospitals, and the health departments of the country, so that no one may be without the benefit of what but few now know enough even to ask for. The time is opportune, the need is everywhere noted by the physicians, the sanitarians, the social forces concerned. . . . We beg of you to seize the occasion and establish a department or secretaryship of health for instant needs and as a guarantee of future safety."¹⁷

Since the war, there have been new demands for federal leadership. Although our form of government recognizes the supremacy of the state in the control of sanitation within

its borders, the growth of interstate commerce, increased speed in travel, war, and other forces have tended to unify the nation. This nationalization of interests has seemed to bring about a new consciousness of a need for a co-ordination of health activities under a central head.

Numerous persons now appear to be looking to the Public Health Service for a higher degree of leadership. Alice Hamilton of the Harvard Medical School, as has already been noted, would have the Service assume more responsibility for the development of research in industrial hygiene; it is the only agency, she says, which can do this work properly. Two speakers at the 1920 meeting of the American Public Health Association argued for the centralization of industrial hygiene work in the Public Health Service.¹⁸ Eugene L. Fisk of the Life Extension Institute suggests that a federal department of health would be helpful in the promotion of periodic medical examinations. One writer would place the solution of the whole narcotic drug problem "unreservedly in the hands of the United States Public Health Service."¹⁹

George C. Whipple of Harvard University said in 1923 that the United States is far behind other civilized countries in its records of vital statistics. "The United States Census Bureau, now permanent, has become increasingly efficient in recent years," he continued, "and its reports are of much value, but not until a centralized public health service has been secured will the nation's vital statistics be put upon a high plane of comprehensiveness and accuracy."²⁰

Charles W. Eliot urges the larger participation of the federal government in the development of physical training. In writing for *The Nation's Business*,* in 1921, he said that such training should be provided for both boys and girls six to eighteen years of age.²¹ It should include, he asserted, "the universal employment of physicians and

* The official organ of the Chamber of Commerce of the United States.

nurses and incessant diagnostic and preventive work." This is "so intensely a national as distinguished from a local interest that the program should be prescribed by the National Bureau of Education or some analogous bureau or commission, and the execution of the program should be incessantly supervised by inspectors appointed and paid by the national government. . . . When universal physical training has been well carried on for twenty years, immense improvement will be seen not only in the aspect of the population as respects posture, the relation of weight to height and muscular development, but also in their comfort, health, and productiveness at daily labor. Universal physical training combined with medical inspection and nursing service in all schools will in time remedy in great measure the grave bodily defects in the population."

In February, 1923, there was presented to Congress the President's plan for the reorganization of government departments, which provided for a "Department of Education and Public Welfare" to include virtually all the existing bureaus and other agencies at Washington dealing with public health matters, together with various welfare and educational bodies, including the Veterans' Bureau.²² This plan apparently meets with the approval of the state health officers, for in May, 1922, a resolution was unanimously adopted by the Conference of State and Provincial Health Authorities of North America expressing alarm over the tendency of legislative bodies to multiply health agencies, and urging the gathering together of all federal health activities into one department of government. The Conference resolved further:

That the Congress be requested to consider a broad program for the stimulation, organization and maintenance of local health departments on a plan which will co-ordinate federal, state, and local health agencies, so that existing conditions which cause such a large percentage of defectives in our population as was revealed by the draft examination may be prevented.²³

Various health authorities, including the Surgeons General of the Army, Navy, and Public Health Service and leading state health officers, met in Washington in January, 1923, and signed a resolution favoring the creation of a new department. They requested that it be called the Department of Education, Health and Welfare.²⁴

Public health work is becoming more and more closely associated with education and with measures for social and economic reconstruction, and if a Department of Education and Public Welfare is established, with a well-trained, experienced person at its head, who commands the respect of both health authorities and educators, if adequate funds are appropriated, and if appointments are made without political influence, it is possible that an organization may be established such as the present situation demands. On the other hand, there is no assurance that the proposed Department would provide a higher degree of leadership or make available more adequate funds for health work. The inclusion of the Veterans' Bureau, in the opinion of the *American Journal of Public Health*, is fraught with danger. "It would act as a millstone around the neck of the proposed department," says one of its editors. And the *Nation's Health* believes that "until a reorganization plan is prepared with the cooperation of those who really understand the situation . . . it will be far better to 'bear those ills we have than to fly to others that we know not of.' " ²⁵ The ultimate solution of the problem, in the opinion of many authorities, is the unification of the large number of federal health agencies in an independent department of health, supported by the various health and civic organizations of the nation and sustained by adequate appropriations from Congress.

The type of leadership which conditions now call for should not and need not result in the dangerous centralization of power in the hands of a bureaucratic government. What is desired is the prevention of duplication and wasted effort, and the concentration of the energies now available

for organized attacks on various diseases. Demonstrations must be systematically staged. A campaign should be waged against nostrums and quackery. A comprehensive plan of popular health education is greatly needed. Because so large a number of civic agencies are doing health work, their representatives should be brought together, with the aid of private national health agencies, so that direction may be given to the efforts which they are putting forth with such admirable spirit. Opportunities ought to be provided which will enable mayors, governors, and other administrative and legislative officers of local and state governments to discuss with leading health authorities new measures for the further development of health work in their various jurisdictions. More adequate plans must be devised for the training of personnel, both students and persons now employed. It is essential that research work be extended. Finally, a comprehensive five, ten or twenty-five year program providing for the most efficient utilization of the energies and resources of all interested agencies must be studiously developed, and a vigorous attack be directed on disease along lines provided by such a program. The establishment of a unified federal health service, free from entangling alliances and adequately supported, might result in such a forward movement. A federal service or department might properly direct the scientific work, supervise general educational enterprises, and bring the state departments and other agencies together for the development of this larger program. Administrative work, it is generally agreed, is the function of the state departments of health.

W. C. Braisted, when he was Surgeon General of the United States Navy and President of the American Medical Association, said in his presidential address before that association: ²⁶ “. . . how slow is the general advance, how lacking in uniformity and concentration are the efforts of individuals and societies working in the interests of a hundred million people! In America we are too prone to leave

general measures for general betterment to professed philanthropists; and here, as elsewhere, what is everybody's business is nobody's business. There is a supineness, an inertia, a criminal neglect in the nation which surrenders to private agencies matters which are of vital concern to the development and expansion of the race and to its triumph in peace or war. Shall we be content to rely on the public spirit of liberal and enlightened millionaires, of a Carnegie or Rockefeller, to do for us, with all our boasted wealth and civilization, things which smaller and less rich nations regard as essential obligations of the governments they maintain and support; and is it not a devitalizing, corrupting, enervating, in every way demoralizing influence in our national life to trust for essentials of national happiness and success to what we must admit are accidental agencies?" He continues: "As a general proposition, I am firmly opposed to the disposition to saddle every public and semi-public enterprise on the government, a tendency arising from a profound misconception of government and its legitimate function, and often associated with a disinclination on the part of those displaying it to perform their own individual duty. But I am unqualifiedly in favor of a national department of health with a cabinet officer at its head, which shall by its very creation give a great object lesson to our people and shall correlate and vastly expand all the efforts now put forth for the improvement of the race, the prolonging of life, and the full development of physical capacity for work and production. . . ."

"We are astonished," said Braisted, "when we reflect that man inhabited the earth and examined himself and his surroundings for thousands of years without discovering what seems to us so evident a thing as the circulation of the blood. But it is not extremely likely that future ages will comment with astonishment and scorn on our stupidity in not carrying on as a nation a systematic effort to improve physical development and to further physical conservation?"

Surely a more concerted attack must be made on the forces of ill health. Under whose leadership the most effective work may be done is a question requiring the serious study of political scientists as well as of the foremost men now engaged in public health work.

The eminence and power of Greece and Rome, it has been suggested, were due in large degree to their physical vigor. The Romans had a universal respect for physical prowess and hardihood. Sparta owed much to its rigid discipline and emphasis on bodily vigor; Athens cultivated physical perfection, not only because the Greeks' artistic sense was gratified by beauty of form, but also because of the belief that the deformed physique was to some extent an index of mental abnormality and moral blemish. Apparently it was when the Greeks and Romans repudiated these ideals and relaxed into indolence, or when they weakened under the repeated attacks of malaria as some writers suggest, that they succumbed to decay from within and from attack without. Physical decadence has accompanied, at least, the fall of nations throughout the ages.²⁷

Now, in the United States, the examination of the nation's young men has revealed a startling degree of defectiveness. The infant and maternal death rates indicate, considering our progress in other fields of science, an amazing disregard for the value of human life. The continued destruction of children and adults by diseases, whose eradication science has now made possible, discloses an apathy which the historian of the future may regard with tremendous significance. But there are a multitude of evidences of progress toward a finer and higher standard of health and national vigor. No inherent reason exists why this nation, if such standards are achieved, should not overcome by a series of rejuvenations the political, economic, and

social influences which have brought about the decay of other civilizations.

War does not now have any biological value—it no longer results in the selection of the fittest. Science has made it so destructive to all members of participating groups that society for the first time in history is definitely planning to reject it. If science will now mobilize the intellectual energies of its potential and actual leaders and the enthusiasms of the people, hitherto absorbed in destructive warfare, for a concerted, unabated attack on disease and all the influences which depress vitality, not only may physical decadence be averted, but energies may be released and an *esprit de corps* developed which will make possible the conquest of all the forces that cause men to be miserable and lead on to political and social ruin.

The ability of the nation to execute a great offensive and to wage a successful warfare against the enemies of health and vigor depends upon the vision and courage of the leaders in the field of public health, upon the participation of the nation's best manhood and womanhood, and upon the generosity and intelligence of legislative and administrative bodies of local, state, and federal governments.

APPENDICES

APPENDIX I

GENERAL MORTALITY RATES AND MISCELLANEOUS DATA, BY STATES

	MOR- TALITY RATE ALL CAUSES PER 1,000 PERSONS 1921 AD- JUSTED ¹	MORTALITY RATES PER 1,000 LIVE BIRTHS, 1921		BIRTH RATE PER 1,000 PERSONS 1921 ⁶	DRAFTED MEN CLASSI- FIED AS PHYSI- CALLY DE- FECTIVE. RATIO PER 1,000 MEN ⁷	DRAFTED MEN RE- JECTED BECAUSE OF PHYSI- CAL DEFECTS. RATIO PER 1,000 MEN ⁸
		<i>Infant mor- tality</i> ³	<i>Maternal (Puer- peral) mor- tality</i> ⁶			
All states	11.3 ²	76 ⁴	6.8 ⁴	24.3 ⁴	468	212
New England						
Maine	11.2	88	7.4	22.9	569	346
New Hampshire...	10.9	87	6.2	22.8	505	203
Vermont	11.1	78	7.3	22.5	613	354
Massachusetts	11.4	76	6.5	23.5	536	267
Rhode Island	12.2	93	7.1	23.6	640	424
Connecticut	10.8	73	5.3	24.0	508	227
Middle Atlantic						
New York	12.0	75	6.3	22.7	503	240
New Jersey	11.8	74	5.9	24.1	452	209
Pennsylvania	12.2	88	6.8	25.8	500	209
East North Central						
Ohio	10.5	75	7.2	21.9	421	188
Indiana	10.7	71	6.9	23.0	417	183
Illinois	11.0	..	..	..	471	202
Michigan	11.0	79	6.9	25.3	467	233
Wisconsin	9.7	72	5.8	23.0	465	200
West North Central						
Minnesota	9.2	59	5.7	23.6	420	190
Iowa .....	..	..	..	..	426	204
Missouri	10.3	..	..	..	489	207
North Dakota .....	..	..	..	..	438	167
South Dakota .....	..	..	..	..	373	188
Nebraska	8.9	59	..	24.5	387	135
Kansas	9.3	63	6.4	23.3	354	147
South Atlantic						
Delaware	12.4	98	6.3	22.4	475	198
Maryland	13.4	94	6.7	25.1	526	244

APPENDIX I—Continued

	MOR- TALITY RATE ALL CAUSES PER 1,000 PERSONS 1921 AD- JUSTED ¹	MORTALITY RATES PER 1,000 LIVE BIRTHS, 1921		BIRTH RATE PER 1,000 PERSONS 1921 ⁶	DRAFTED MEN CLASSI- FIED AS PHYSI- CALLY DE- FECTIVE. RATIO PER 1,000 MEN ⁷	DRAFTED MEN RE- JECTED BECAUSE OF PHYSI- CAL DEFECTS. RATIO PER 1,000 MEN ⁸
		<i>Infant mor- tality</i> ³	<i>Maternal (Puer- peral) mor- tality</i> ⁵			
Dist. of Columbia..	..	83	..	20.5	453	163
Virginia	12.7	79	7.0	29.9	604	246
West Virginia .....	..	..	..	..	507	178
North Carolina....	11.9	75	7.3	33.8	454	213
South Carolina....	13.3	96	9.8	29.5	423	222
Georgia .....	..	..	..	..	456	225
Florida	12.2	..	..	..	542	200
East South Central						
Kentucky	10.5	62	6.3	27.6	382	207
Tennessee	11.1	..	..	..	442	246
Alabama .....	..	..	..	..	428	180
Mississippi	12.1	68	9.5	25.8	426	200
West South Central						
Arkansas .....	..	..	..	..	384	164
Louisiana	12.3	..	..	..	439	239
Oklahoma .....	..	..	..	..	433	185
Texas .....	..	..	..	..	402	176
Mountain						
Montana	8.8	..	..	..	457	163
Idaho .....	..	..	..	..	479	180
Wyoming .....	..	..	..	..	514	128
Colorado	12.4	..	..	..	545	213
New Mexico.....	..	..	..	..	458	207
Arizona .....	..	..	..	..	410	153
Utah	10.8	73	7.3	31.6	506	219
Nevada .....	..	..	..	..	476	186
Pacific						
Washington	9.4	55	7.8	19.6	549	263
Oregon	9.7	51	7.4	19.3	580	220
California	12.1	66	6.8	20.2	584	265

APPENDIX 2

MORTALITY RATES ACCORDING TO CERTAIN CAUSES, BY STATES

	MORTALITY RATES FOR CERTAIN CAUSES—PER 100,000					USUAL AND EXCESS MORTALITY FROM INFLUENZA AND PNEUMONIA ALL FORMS—PER 100,000 *	
	<i>Tuber- culosis all forms 1921. Ad- justed⁹</i>	<i>Cancer 1921. Ad- justed¹¹</i>	<i>Ty- phoid fever 1921. Ad- justed¹³</i>	<i>Or- ganic heart dis- eases 1920¹⁴</i>	<i>Acute ne- phritis and Bright's disease 1920¹⁵</i>	<i>1915¹⁰ (Nor- mal)</i>	<i>Excess in 10 months Sept. 1, 1918 July 1, 1919¹⁸</i>
All states	99.4 ¹²	86.0 ¹²	9.0 ¹²	141.9 ¹⁰	89.4 ¹⁰	147.2 ¹⁷	528.4 ¹⁹
New England							
Maine	79.0	80.8	7.5	185.9	111.7	166.0	479.8
New Hampshire..	76.8	80.4	3.7	204.6	100.7	153.2	673.4
Vermont	65.9	77.2	5.7	228.5	111.0	150.0	514.5
Massachusetts ...	94.5	99.6	3.0	195.2	75.5	170.7	602.3
Rhode Island....	104.2	97.4	2.6	160.5	96.8	185.8	558.8
Connecticut	92.7	88.5	3.5	149.5	88.1	169.2	644.6
Middle Atlantic							
New York	96.3	96.0	3.6	191.0	110.4	185.2	479.4
New Jersey	89.9	92.7	4.5	159.4	105.4	163.4	649.3
Pennsylvania	90.7	84.1	7.4	141.4	98.8	168.9	756.7
East North Central							
Ohio	85.0	77.7	9.1	143.4	76.2	135.2	449.1
Indiana	89.7	74.2	12.7	147.8	105.6	126.1	364.1
Illinois	81.1	88.0	6.0	145.6	90.8	..	..
Michigan	70.9	81.2	7.8	159.1	69.5	111.9	344.4
Wisconsin	74.0	85.9	2.9	115.3	61.8	119.6	359.3
West North Central							
Minnesota	75.3	85.7	3.5	113.7	66.0	100.3	361.6
Iowa .....	..	..	..	..	..	..	..
Missouri	88.9	74.0	13.2	119.0	98.4	144.2	389.5
North Dakota....	..	..	..	..	..	..	..
South Dakota....	..	..	..	..	..	..	..
Nebraska	36.7	79.4	5.0	92.7	52.1	..	..
Kansas	42.3	69.3	8.7	114.0	82.2	116.7	423.0

* For a discussion of excess mortality due to the influenza epidemic, see page 138.

APPENDIX 2—Continued

	MORTALITY RATES FOR CERTAIN CAUSES—PER 100,000					USUAL AND EXCESS MOR- TALITY FROM INFLUENZA AND PNEUMONIA ALL FORMS— PER 100,000	
	<i>Tuber- culosis all forms 1921. Ad- justed⁹</i>	<i>Cancer 1921. Ad- justed¹¹</i>	<i>Ty- phoid fever 1921. Ad- justed¹³</i>	<i>Or- ganic heart dis- eases 1920¹⁴</i>	<i>Acute ne- phritis and Bright's disease 1920¹⁵</i>	<i>1915¹⁰ (Nor- mal)</i>	<i>Excess in 10 months Sept. 1, 1918 July 1, 1919¹³</i>
South Atlantic							
Delaware	136.3	66.9	11.9	164.2	125.9	..	..
Maryland	132.4	85.3	10.3	165.1	139.8	171.0	693.4
Dist. of Columbia ..	..	..	..	176.7	109.7	189.8	584.6
Virginia	140.7	62.2	16.2	124.7	90.5	131.1	623.0
West Virginia....	..	..	..	..	..	..	..
North Carolina...	117.7	53.7	12.0	93.2	74.7	148.4	..
South Carolina...	124.9	47.6	26.5	97.0	83.8	..	..
Georgia .....	..	..	..	..	..	..	..
Florida	96.2	55.4	18.0	97.4	96.2	..	..
East South Central							
Kentucky	136.6	55.7	26.3	87.6	78.9	118.0	577.7
Tennessee	148.4	51.9	26.6	86.0	65.6	..	..
Alabama .....	..	..	..	..	..	..	..
Mississippi	120.4	52.4	18.6	85.3	83.3	..	..
West South Central							
Arkansas .....	..	..	..	..	..	..	..
Louisiana	128.4	67.6	18.0	107.5	86.9	..	..
Oklahoma .....	..	..	..	..	..	..	..
Texas .....	..	..	..	..	..	..	..
Mountain							
Montana	56.5	65.9	3.4	76.7	48.9	117.7	746.0
Idaho .....	..	..	..	..	..	..	..
Wyoming .....	..	..	..	..	..	..	..
Colorado	173.8	72.3	10.3	105.0	76.6	170.5	680.9
New Mexico ....	..	..	..	..	..	..	..
Arizona .....	..	..	..	..	..	..	..
Utah	41.3	77.1	9.0	106.8	66.8	119.5	532.4
Nevada .....	..	..	..	..	..	..	..
Pacific							
Washington	79.4	79.6	5.3	115.8	61.7	78.4	418.3
Oregon	72.9	80.2	5.5	144.3	65.4	..	..
California	137.2	87.7	4.3	182.3	94.3	102.4	543.3

POPULATION DATA, BY STATES

NUMBER OF PERSONS, 1920 ²⁰					PERCENTAGE OF CHILDREN 10 TO 15 ENGAGED IN GAINFUL OCCUPATIONS 1920 ²²	
TOTAL	COLOR ²¹		NATIVITY			
	White	Negro	Native	Foreign born		
All states	105,710,620	94,820,915	10,463,131	91,789,928	13,920,692	8.5
New England						
Maine	768,014	765,695	1,310	660,200	107,814	3.1
New Hampshire	443,083	442,331	621	351,686	91,397	3.3
Vermont	352,428	351,817	572	307,870	44,558	3.3
Massachusetts	3,852,356	3,803,524	45,466	2,763,808	1,088,548	8.6
Rhode Island	604,397	593,980	10,036	429,208	175,189	13.4
Connecticut	1,380,631	1,358,732	21,046	1,002,192	378,439	8.1
Middle Atlantic						
New York	10,385,227	10,172,027	198,483	7,559,852	2,825,375	4.7
New Jersey	3,155,900	3,037,087	117,132	2,413,414	742,486	7.6
Pennsylvania	8,720,017	8,432,726	284,568	7,327,460	1,392,557	5.6
East North Central						
Ohio	5,759,394	5,571,893	186,187	5,078,942	680,452	3.0
Indiana	2,930,390	2,849,071	80,810	2,779,062	151,328	5.2
Illinois	6,485,280	6,299,333	182,274	5,274,696	1,210,584	5.3
Michigan	3,668,412	3,601,627	60,082	2,939,120	729,292	3.4
Wisconsin	2,632,067	2,616,938	5,201	2,171,582	460,485	5.1
West North Central						
Minnesota	2,387,125	2,368,936	8,809	1,900,330	486,795	3.0
Iowa	2,404,021	2,384,181	19,005	2,178,027	225,994	3.4

APPENDIX 3—Continued

	NUMBER OF PERSONS, 1920 ²⁰				PERCENTAGE OF CHILDREN 10 TO 15 ENGAGED IN GAINFUL OCCUPATIONS 1920 ²²	
	TOTAL	COLOR ²¹		NATIVITY		
		White	Negro	Native		Foreign born
Missouri	3,404,055	3,225,044	178,241	3,217,220	186,835	5.7
North Dakota	646,872	639,954	467	515,009	131,863	3.2
South Dakota	636,547	619,147	832	554,013	82,534	3.3
Nebraska	1,296,372	1,279,219	13,242	1,145,707	150,665	3.4
Kansas	1,769,257	1,708,906	57,925	1,658,290	110,967	3.4
South Atlantic						
Delaware	223,003	192,615	30,335	203,102	19,901	5.9
Maryland	1,449,661	1,204,737	244,479	1,346,482	103,179	7.5
District of Columbia.....	437,571	326,860	109,966	408,206	29,365	5.3
Virginia	2,309,187	1,617,909	690,017	2,277,482	31,705	8.2
West Virginia	1,463,701	1,377,235	86,345	1,401,596	62,105	3.0
North Carolina	2,559,123	1,783,779	763,407	2,551,851	7,272	16.6
South Carolina	1,683,724	818,538	864,719	1,677,142	6,582	24.4
Georgia	2,895,832	1,689,114	1,206,365	2,879,268	16,564	20.8
Florida	968,470	638,153	329,487	914,606	53,864	8.8
East South Central						
Kentucky	2,416,630	2,180,560	235,938	2,385,724	30,906	8.4
Tennessee	2,337,885	1,885,993	451,758	2,322,237	15,648	12.3
Alabama	2,348,174	1,447,032	900,652	2,330,147	18,027	24.1
Mississippi	1,790,618	853,962	935,184	1,782,210	8,408	25.5
West South Central						
Arkansas	1,752,204	1,279,757	472,220	1,738,067	14,137	18.5
Louisiana	1,798,599	1,096,611	700,257	1,752,082	46,427	12.5

Oklahoma	2,028,283	1,821,194	149,408	1,987,851	40,432	7.9
Texas	4,663,228	3,918,165	741,694	4,299,396	363,832	12.6
Mountain						
Montana	548,889	534,260	1,658	453,298	95,591	2.3
Idaho	431,866	425,668	920	391,119	40,747	2.9
Wyoming	194,402	190,146	1,375	167,835	26,567	3.0
Colorado	939,629	924,103	11,318	820,491	119,138	4.3
New Mexico	360,350	334,673	5,733	330,542	29,808	4.6
Arizona	334,162	291,449	8,005	253,596	80,566	7.1
Utah	449,396	441,901	1,446	390,196	59,200	3.9
Nevada	77,407	70,699	346	61,404	16,003	2.5
Pacific						
Washington	1,356,621	1,319,777	6,883	1,091,329	265,292	3.4
Oregon	783,389	769,146	2,144	675,745	107,644	3.0
California	3,426,861	3,264,711	38,763	2,669,236	757,625	3.0

APPENDIX 4

NUMBER OF DISPENSARIES, PUBLIC HEALTH NURSES, WHOLE-TIME COUNTY HEALTH OFFICERS, AND APPROPRIATIONS OF STATE DEPARTMENTS OF HEALTH, BY STATES

	Number of general dispensaries 1922 ²³	Number of Tuber- culosis clinics 1922 ²³	Number of venereal clinics 1922 ²³	Number of nervous and mental clinics 1922 ²³	Total number of dispen- saries (general and special) 1922 ²³	Number of public health nurses 1922 ²⁴	Number of whole- time county health officers 1922 ²⁵	Appro- priations of State Depart- ments of Health ²⁶ 1922
All states	935	888	831	345	3,138	11,764	231	\$9,188,101
New England								
Maine	8	5	7	2	28	69	5	105,000
New Hampshire	3	31	5	..	39	130	..	47,650
Vermont	4	1	5	3	13	40	10	40,000
Massachusetts	74	86	26	40	234	1,051	1	492,260
Rhode Island	13	12	7	6	40	139	..	71,563
Connecticut	16	30	11	6	66	375	..	177,500
Middle Atlantic								
New York	163	118	95	67	451	2,370	..	1,081,497
New Jersey	43	52	25	6	127	650	..	298,800
Pennsylvania	136	123	166	48	479	977	..	1,385,060
East North Central								
Ohio	40	28	56	19	149	729	42	531,471
Indiana	10	42	19	6	78	232	1	170,000
Illinois	47	76	40	18	185	845	1	572,590
Michigan	30	31	25	14	112	571	..	400,950
Wisconsin	14	21	15	7	64	288	..	196,600

APPENDIX 4—Continued

	Number of general dispen- saries 1922 ²³	Number of tuber- culosis clinics 1922 ²³	Number of venereal clinics 1922 ²³	Number of nervous and mental clinics 1922 ²³	Total number of dispen- saries (general and special) 1922 ²³	Number of public health nurses 1922 ²³	Number of whole- time county health officers 1922 ²³	Appro- priations of State Depart- ments of Health 1922 ²⁴
Wyoming	3	..	1	..	4	11	..	12,250
Colorado	5	8	13	3	29	60	..	64,950
New Mexico	1	1	2	..	5	15	8	28,500
Arizona	1	5	1	1	10	31	..	31,909
Utah	4	..	5	..	9	50	1	24,995
Nevada	3	..	..	..	3	2	..	8,800
Pacific								
Washington	2	10	4	1	25	118	4	39,500
Oregon	3	1	1	..	9	44	1	40,000
California	56	31	28	20	142	401	5	309,313
Hawaiian Islands .....	..	..	..	..	..	20	..	..
Philippine Islands .....	..	..	..	..	..	70	..	..
Porto Rico .....	..	..	..	..	..	2	..	..

APPENDIX 5

REPORTABLE DISEASES, STATE OF NEW YORK,* 1922 ²⁷

<i>Causes of sickness</i>	<i>Cases</i>
Measles	58,540
Epidemic influenza	35,582
Pneumonia	31,902
(a) Acute lobar	
(b) Bronchial or lobular	
Tuberculosis	23,415
Syphilis	23,246
Scarlet fever	21,524
Diphtheria (membranous croup).....	18,895
Chicken pox	15,480
Whooping cough	14,644
Mumps	11,066
Gonorrhea	9,694
Typhoid fever (except paratyphoid).....	2,258
German measles	1,746
Encephalitis lethargica	718
Poliomyelitis, acute anterior (infantile paralysis).....	612
Epidemic cerebrospinal meningitis.....	313
Smallpox	254
Puerperal septicemia	252
Epidemic or streptococcus (septic) sore throat.....	232
Malaria	194
Tetanus	117
Vincent's angina	93
Paratyphoid fever	80
Dysentery (amœbic and bacillary).....	69
Trachoma	56
Ophthalmia neonatorum (suppurative conjunctivitis of the newborn)	46
Anthrax	13
Typhus fever	8
Botulism	2
Rabies	1
Chancroid	1

*The State Sanitary Code does not apply to New York City; the latter's Sanitary Code should be referred to for the exact list of its reportable diseases.

APPENDIX 6

PERCENTAGE OF PERSONS IN SPECIFIED AGE GROUP SHOWING IMPORTANT PHYSICAL IMPAIRMENTS
16,662 White Males in the Metropolitan Life Insurance Co., Ordinary Department, 1921²⁶

<i>Impairment</i>	<i>All ages</i>	<i>Under 25</i>	<i>25 to 34</i>	<i>35 to 44</i>	<i>45 to 54</i>	<i>55 and over</i>
Persons in Specified Age Group						
Number	16,662	861	5,885	5,799	3,023	1,094
Weight:						
Over 20 per cent underweight.....	2.4	2.0	3.2	2.3	1.5	2.1
Over 20 per cent overweight.....	12.9	4.9	8.1	14.4	18.9	19.8
Eyes, Ears:						
Defective vision corrected.....	25.4	15.2	18.4	21.8	38.3	48.7
Defective vision uncorrected.....	29.5	28.3	28.9	30.0	29.4	31.8
Otitis media; discharging ear.....	1.2	2.0	1.3	1.0	1.2	.5
Nose and Throat:						
Deflected septum—slight	22.8	24.5	24.5	23.0	19.9	19.2
Deflected septum—marked	2.7	2.6	2.8	3.1	2.4	1.4
Enlarged, septic or buried tonsils.....	26.2	34.0	32.8	25.6	17.1	13.0
Naso-pharyngitis—chronic	5.5	4.9	6.0	5.4	5.0	4.4
Naso-pharyngitis—acute	5.5	6.5	5.5	5.5	5.0	6.2
Hypertrophic rhinitis—enlarged turbinates.....	14.8	19.0	16.9	15.1	10.7	10.1
Teeth and Root Infection:						
Carious teeth; septic roots.....	8.5	6.4	7.9	8.1	9.2	13.0
Slightly infected gums.....	10.3	3.6	7.3	11.1	14.7	16.4
Pyorrhea—definite	4.8	1.2	2.7	5.7	7.1	7.4
Heavy dentistry—X-ray advised.....	41.8	30.0	40.7	44.2	43.5	38.8
Heart and Pulse:						
Functional murmur or irregularity.....	6.0	6.9	5.5	5.5	6.3	9.3
Mitral murmur—stenosis .....	.2	.2	.2	.1	.2	.4

Mitral murmur—regurgitation .....	.7	.3	.7	.5	.9	1.5
Aortic murmur—stenosis .....	.1	..	.1	.1	..	.2
Aortic murmur—regurgitation .....	..	..	..	..	.1	.1
Enlargement	2.7	1.7	2.1	2.0	3.7	8.2
Slow pulse—below 58	1.4	1.4	1.0	1.4	1.7	1.9
Rapid pulse—above 90	8.3	10.9	8.2	8.2	8.6	6.7
Intermittent pulse—extra systoles .....	.5	.2	.4	.4	.8	1.7
Blood-vessels and Blood Pressure:						
Normal condition of blood-vessels	77.4	89.5	83.6	76.6	71.6	55.2
Slight arterial thickening	14.3	7.2	10.9	14.9	18.2	24.0
Moderate arterial thickening	4.6	2.0	3.1	3.9	6.5	13.6
Marked arterial thickening .....	.6	.1	.4	.3	.7	3.7
Normal blood pressure	78.8	84.9	82.6	80.0	73.3	61.8
Blood pressure—20-40 above average	6.2	4.6	4.6	4.9	8.3	16.3
Blood pressure—40-60 above average .....	.7	.1	.2	.5	1.1	4.3
Blood pressure—60 or more above average .....	.3	.1	..	.1	.7	2.3
Stomach; Abdominal Organs:						
Constipation	39.7	34.6	39.5	40.4	40.1	40.3
Tenderness over liver and gall bladder .....	.6	.1	.4	.8	.9	.7
Tenderness in region of appendix	2.3	1.7	2.5	2.5	2.1	1.6
Hemorrhoids	12.3	4.4	9.3	12.8	17.7	16.3
Abdominal Organs; Inguinal Region:						
Weak inguinal rings	5.9	5.8	5.9	6.0	5.9	5.2
Inguinal hernia—no truss	2.2	1.4	1.4	2.2	3.1	4.8
Inguinal hernia—truss worn	2.9	.2	1.4	2.6	5.1	8.2
Varicocele	8.1	9.9	8.5	7.8	7.8	6.9
Genito-Urinary:						
Prostate gland—enlarged, hard, tender or boggy	3.9	1.0	2.0	3.1	5.6	15.8
Endocrine Disturbances:						
Enlarged thyroid—simple goiter	2.1	3.1	3.3	1.6	1.1	.8
Miscellaneous Impairments:						
Headache	15.4	13.7	16.4	16.6	13.7	10.0

APPENDIX 6—Continued

PERCENTAGE OF PERSONS IN SPECIFIED AGE GROUP SHOWING IMPORTANT PHYSICAL IMPAIRMENTS
16,662 White Males in the Metropolitan Life Insurance Co., Ordinary Department, 1921²⁸

<i>Impairment</i>	<i>All ages</i>	<i>Under 25</i>	<i>25 to 34</i>	<i>35 to 44</i>	<i>45 to 54</i>	<i>55 and over</i>
Use of patent medicines.....	8.8	6.3	8.9	9.5	8.5	7.4
Use of laxatives.....	9.1	6.4	7.6	9.1	11.4	12.6
Frequent colds	17.7	22.9	20.8	16.4	14.2	13.6
Urinary Findings:						
Normal	74.1	72.6	75.2	75.4	72.4	66.8
Albumin—slight trace	12.2	11.6	11.6	11.8	13.5	15.1
Albumin—definite trace	2.3	3.3	2.2	1.7	2.4	4.9
Albumin—marked amount .....	.8	1.3	.6	.7	.9	1.2
Sugar—trace	3.4	4.1	3.0	3.4	3.9	4.0
Sugar—marked amount (quantitative) .....	.4	.1	.2	.3	.9	1.0
Cast—granular or epithelial.....	.3	.2	..	.4	.7	.7
Cast—hyaline	3.9	3.8	2.8	3.8	5.0	7.1
Indican	3.7	2.9	3.8	3.8	3.5	4.2

APPENDIX 7

NUMBER OF PHYSICIANS IN THE UNITED STATES, BY STATES, AND NUMBER OF MEMBERS OF AMERICAN MEDICAL ASSOCIATION AND STATE MEDICAL ASSOCIATIONS *
For the Year 1922 ²⁹

<i>Constituent Association of</i>	<i>No. counties in state</i>	<i>No. component societies in state assn.</i>	<i>No. physicians in state (8th Ed. Directory)</i>	<i>No. members of state assn.* 1923</i>
Alabama	67	67	2,313	1,666
Arizona	14	11	372	143
Arkansas	75	66	2,303	1,097
California	58	40	7,549	3,335
Colorado	63	25	1,882	1,070
Connecticut	8	8	1,727	1,112
Delaware	3	3	265	141
Dist. Columbia .....	..	..	1,924	549
Florida	54	29	1,348	622
Georgia	154	93	3,274	1,595
Idaho	44	10	452	273
Illinois	102	95	10,716	7,175
Indiana	92	83	4,353	2,436
Iowa	99	97	3,490	2,384
Kansas	105	61	2,492	1,577
Kentucky	120	110	3,155	2,028
Louisiana	64	37	2,058	1,109
Maine	16	15	1,067	746
Maryland	23	21	2,349	1,288
Massachusetts	14	18	5,977	4,059
Michigan	83	56	4,653	2,972
Minnesota	86	38	2,774	1,827
Mississippi	81	35	1,792	887
Missouri	114	101	5,827	3,564
Montana	51	16	568	325
Nebraska	93	56	1,913	1,270
Nevada	17	3	140	107
New Hampshire	10	10	615	520
New Jersey	21	21	3,362	1,935
New Mexico	29	13	399	325
New York	62	60	16,857	9,879
North Carolina	100	71	2,226	1,367
North Dakota	53	14	517	417
Ohio	88	85	8,086	4,834
Oklahoma	77	69	2,600	1,586
Oregon	36	16	1,158	578
Pennsylvania	67	63	11,241	7,309
Rhode Island	5	6	754	388

APPENDIX 7—Continued

<i>Constituent Association of</i>	<i>No. counties in state</i>	<i>No. com- ponent societies in state assn.</i>	<i>No. physi- cians in state (8th Ed. Direc- tory)</i>	<i>No. mem- bers of state assn.* 1923</i>
South Carolina	46	41	1,368	873
South Dakota	68	11	630	356
Tennessee	95	65	3,228	1,554
Texas	248	135	6,094	3,628
Utah	29	6	497	325
Vermont	14	10	556	394
Virginia	100	52	2,503	1,773
Washington	39	19	1,756	1,121
West Virginia	55	28	1,751	1,496
Wisconsin	71	53	2,772	1,921
Wyoming	22	7	263	134
Misc., Foreign, Govt. sub. for Army, Navy and U. S. P. H. S.....	..	..	..	..
Alaska .....	..	..	..	20
Hawaii	5	..	..	92
Porto Rico	7	..	..	98
Philippine Islands....	..	..	..	129
Canal Zone .....	..	..	..	110
Totals	3,047	2,049	145,966	88,519

* The total membership of state associations comprises the membership of the A. M. A.

APPENDIX 8

THE SUPPLY OF PHYSICIANS ACCORDING TO POPULATION GROUPS³⁰

<i>Population of cities (1920)</i>	<i>No. of cities</i>	<i>Total population</i>	<i>Per cent population</i>	<i>Number of physicians *</i>	<i>Ratio of physicians to population</i>	<i>Percentage all physicians</i>
500,000 and above..	12	16,369,310	15.5	30,932	529	21.0
200,000 to 500,000..	21	6,353,645	6.1	12,862	493	9.0
50,000 to 200,000..	111	9,973,462	9.4	17,254	578	12.0
10,000 to 50,000..	602	12,017,783	11.4	21,204	563	15.0
5,000 to 10,000..	721	4,997,794	4.7	9,313	527	6.0
Below 5,000.....	..	56,153,587	52.9	54,043	1,020	37.0
Totals .....	..	105,708,771	100.0	145,608	726	100.0
Totals in cities of 5,000 and over..			47.1	91,565		

* Figures regarding the numbers of physicians are from the American Medical Directory for 1921.

APPENDIX 9

NUMBER OF MEDICAL COLLEGE GRADUATES,³¹ BY YEARS

<i>Year</i>	<i>Non-sectarian</i>	<i>Homeopathic</i>	<i>Eclectic</i>	<i>Physio-med.</i>	<i>Non-descript</i>	<i>Total</i>	<i>Percent-of medical graduates with liberal arts degree</i>
1880.....	2,673	380	188	..	..	3,241	..
1890.....	3,853	380	221	..	..	4,454	..
1900.....	4,715	413	86	..	..	5,214	..
1905.....	5,126	276	153	22	23	5,600	..
1910.....	4,113	183	114	16	14	4,440	15.3
1915.....	3,286	195	55	..	..	3,536	24.3
1920.....	2,826	97	30	..	94	3,047	43.5
1921.....	2,969	115	30	..	78	3,192	46.0
1922.....	2,358	64	34	..	73	2,529	57.5
1923.....	..	..	..	(Estimate)		3,000 ³²	..

APPENDIX 10

NUMBER OF PERSONS RECEIVING GRADUATE DEGREES IN PUBLIC HEALTH SUBJECTS FROM ELEVEN INSTITUTIONS IN THE YEARS 1920, 1921, AND 1922³³

	1920	1921	1922
Johns Hopkins University School of Hygiene and Public Health			
D.P.H. (M.D. plus 2 years).....	2	14	8
D.Sc. (A.B. plus 3 years).....	1	1	5
C.P.H. (A.B. plus 1 year).....	5	6	6
School of Public Health, Harvard University— Massachusetts Institute of Technology			
C.P.H. (M.D. plus 1 year, or A.B. plus 2 years)	9	16	15
Harvard Medical School			
Dr.P.H. (M.D. plus 2 years).....	2	2	0
Massachusetts Institute of Technology			
M.S. (B.S. plus 1 year).....	1	0	0
Ph.D. (A.B. plus 3 years).....	0	1	0
Harvard University School of Public Health (or- ganized in 1922).....	0	0	0
University of Pennsylvania School of Hygiene and Public Health			
D.P.H. (M.D. plus 2 years).....	1	6	2
Cert.San. (A.B. plus 1 year).....	4	0	1
Ph.D. (A.B. plus 3 years).....	0	0	1
Yale University			
D.P.H. (M.D. plus 2 years).....	2	0	0
C.P.H. (A.B. plus 1 year).....	2	1	5
Ph.D. (A.B. plus 3 years).....	1	3	4
M.S. (A.B. plus 1 year).....	1	2	0
University of Michigan			
M.S. (A.B. plus 1 year).....	1	2	1
D.P.H. (A.B. or M.D. plus 2 or 3 years).....	1	0	2
D.Sc. (A.B. or M.D. plus 2 or 3 years).....	0	0	1
University of Louisville			
C.P.H. (M.D. plus 1 year).....	2	2	0
D.P.H. (M.D. plus 2 years).....	0	0	0
University of California			
Gr.P.H. (equivalent to Dr.P.H., M.D. plus 1 year, or A.B. plus 2 years).....	0	0	2
M.A. (A.B. plus 1 year).....	0	0	1
New York University (University and Bellevue Hospital Medical College)			
C.P.H. (25 days' residence, or 300 hours' reading and 6 days' residence).....	62	41	12
Totals	97	97	66
Totals (not including C.P.H. granted by New York University for short term).....	35	56	54

APPENDIX II

UNIVERSITIES AND COLLEGES

OFFERING COURSES IN PUBLIC HEALTH NURSING FOR GRADUATE NURSES

California

University of California, Department of Hygiene, Berkeley, Cal.
Nine months' course.

Iowa

University of Iowa, College of Medicine, School of Public Health
Nursing, Iowa City, Iowa.
Eight months' course.

Kentucky

School of Public Health, University of Louisville, in co-operation
with the State Board of Health, 532 West Main Street,
Louisville, Kentucky.
Eight months' course.

Massachusetts

School of Public Health Nursing, directed by Simmons College
and the Instructive District Nursing Association, 561 Massa-
chusetts Avenue, Boston, Mass.
Nine months' course.

Michigan

University of Michigan, Ann Arbor, Michigan.
Nine months' course.

Minnesota

University of Minnesota, School of Nursing.
Nine months' course.

Missouri

University of Missouri, The Missouri School of Social Economy,
Department of Public Health Nursing, 2221 Locust Street,
St. Louis, Mo.
Eight months' course.

New York

Columbia University, Teachers College, Department of Nursing
and Health, New York City.
Two years' course.

Ohio

University of Cincinnati, School of Nursing and Health, Cincinnati, Ohio.

Two terms' course.

Western Reserve University School of Applied Social Sciences, Cleveland, Ohio.

One academic year course.

Oregon

University of Oregon, Portland School of Social Work, Portland, Oregon.

Nine months' course.

Pennsylvania

The Pennsylvania School for Social Service, Department of Public Health Nursing, 339 South Broad Street, Philadelphia, Pa., in affiliation with the University of Pennsylvania.

Nine months' course.

Tennessee

George Peabody College for Teachers, Department of Public Health Nursing, Nashville, Tenn.

Six months' course.

Texas

University of Texas, Department of Public Health Nursing, Austin, Texas.

Five months' course.

Virginia

School of Social Work and Public Health, 1223 East Broad Street, Richmond, Va., affiliated with College of William and Mary, Williamsburg, Va.

Eight months' course.

Washington

University of Washington, College of Science, Department of Nursing, Seattle, Wash.

Nine months' course.

Many of these schools offer two to four months' experience in public health nursing for undergraduate nurses, assigned from their training schools as a part of a three- or five-year training.

Credit obtained in these courses is usually granted by the University towards a degree, if the student is eligible for matriculation.

APPENDIX 12

PRINCIPAL BUREAUS OF THE FEDERAL GOVERNMENT DEALING WITH PUBLIC HEALTH PROBLEMS AND THEIR HEADS

Treasury Department:

Bureau of the Public Health Service

Hugh S. Cumming, Surgeon General

Division of Scientific Research

A. M. Stimson, Assistant Surgeon General in Charge

Division of Hospitals and Relief

F. C. Smith, Assistant Surgeon General in Charge

Division of Domestic Quarantine

W. F. Draper, Assistant Surgeon General in Charge

Division of Foreign and Insular Quarantine and Immigration

J. D. Long, Assistant Surgeon General in Charge

Division of Personnel and Accounts

J. W. Kerr, Assistant Surgeon General in Charge

Division of Sanitary Reports and Statistics

B. J. Lloyd, Assistant Surgeon General in Charge

Division of Venereal Diseases

M. J. White, Assistant Surgeon General in Charge

Bureau of Internal Revenue

D. H. Blair, Commissioner

Enforces anti-narcotic and prohibition laws.

Customs Service

Ernest W. Camp, Chief

Co-operates with the Department of Agriculture in enforcing
Pure Food and Drugs Act and meat inspection laws.

Labor Department:

Children's Bureau

Grace Abbott, Chief

Ella Oppenheimer, Chief, Division of Hygiene

Anna E. Rude, Chief, Division of Maternity and Infant
Hygiene

Investigates infant mortality, the birth rate and diseases of
children, administers the maternity and infancy laws.

Women's Bureau

Mary Anderson, Director

Conducts investigations of the health of women in industry.

Bureau of Labor Statistics

Ethelbert Stewart, Commissioner of Labor Statistics

Studies problems of industrial hygiene.

Bureau of Immigration

W. W. Husband, Commissioner General of Immigration

Excludes persons with certain diseases, after they are examined by officers of the Public Health Service, from entering the United States.

State Department:

Consular Service

Herbert C. Hengstler, Chief

Issues bills of health to vessels from foreign lands bound for the United States.

Department of Commerce:

Bureau of the Census

William M. Steuart, Director

William H. Davis, Chief, Vital Statistics

Bureau of Fisheries

Henry O'Malley, Commissioner

Has responsibility for the health of the people of the Pribiloff Islands; has assisted in work of malaria control.

Department of the Interior:

Bureau of Education

John J. Tigert, Commissioner

———, Specialist in School Hygiene and Sanitation

Maintains a School Hygiene Section. Cares for the health of the natives of Alaska.

Office of Indian Affairs

Charles H. Burke, Commissioner

Medical Section.—Has charge of the health of Indians on reservations and all Indian wards of the government.

Geological Survey

Philip S. Smith, Director

Conducts investigations of water supply.

Bureau of Mines

H. Foster Bain, Director

Conducts, with the aid of the Public Health Service, studies of health hazards in mining.

Government Hospital for the Insane (St. Elizabeth's)

William A. White, Superintendent

Freedmen's Hospital

William A. Warfield, Surgeon in Chief

Department of Agriculture:

Bureau of Chemistry

Charles A. Browne, Chief,

Conducts analytical work under the Pure Food and Drugs Act.

Bureau of Animal Industry

John R. Mohler, Chief

Deals with the diseases of animals, some of which affect the health of man, and inspects meat products shipped from state to state.

Bureau of Entomology

L. O. Howard, Entomologist and Chief

Studies insects which affect the health of man.

Bureau of Biological Survey

E. W. Nelson, Biologist and Chief

Co-operates in eradication of rats and plague-carrying ground squirrels.

Bureau of Agricultural Economics

Henry C. Taylor, Chief

Inspects food.

States Relations Service

A. C. True, Director

Carries on health educational work in rural communities.

Department of Justice:

Heber H. Votaw, Superintendent of Prisons

Is responsible for the health of all federal prisoners.

Post Office Department:

Division of Solicitor

John H. Edwards, Solicitor

Prosecutes persons and firms using the mails for the advertising of fraudulent remedies.

United States Veterans' Bureau:

Frank T. Hines, Director

Cares for disabled ex-soldiers.

International Joint Commission:

Seeks to prevent the pollution of waters along the boundaries of the United States.

NOTE: The above list does not include the medical divisions of the War and Navy Departments, and various health services, the primary purpose of which is to look after the health of their own personnel.

APPENDIX 13

EXECUTIVE HEALTH OFFICERS

STATE DEPARTMENTS OF HEALTH

Alabama.....	S. W. Welch, M.D.....	Montgomery
Arizona.....	F. T. Fahlen, M.D.....	Phoenix
Arkansas.....	C. W. Garrison, M.D.....	Little Rock
California.....	Walter M. Dickie, M.D.....	Sacramento
Colorado.....	Tracy R. Love, M.D.....	Denver
Connecticut.....	Stanley H. Osborn, M.D.....	Hartford
Delaware.....	L. S. Conwell, M.D.....	Dover
District of Columbia....	William C. Fowler, M.D.....	Washington
Florida.....	Raymond C. Turck, M.D.....	Jacksonville
Georgia.....	T. F. Abercrombie, M.D.....	Atlanta
Idaho.....	David Burrell.....	Boise
Illinois.....	I. D. Rawlings, M.D.....	Springfield
Indiana.....	William F. King, M.D.....	Indianapolis
Iowa.....	Rodney P. Fagen, M.D.....	Des Moines
Kansas.....	Milton O. Nyberg, M.D.....	Topeka
Kentucky.....	A. T. McCormack, M.D.....	Louisville
Louisiana.....	Oscar Dowling, M.D.....	New Orleans
Maine.....	C. F. Kendall, M.D.....	Augusta
Maryland.....	John S. Fulton, M.D.....	Baltimore
Massachusetts.....	Eugene R. Kelley, M.D.....	Boston
Michigan.....	Richard M. Olin, M.D.....	Lansing
Minnesota.....	A. J. Chesley, M.D.....	St. Paul
Mississippi.....	W. S. Leathers, M.D.....	Jackson
Missouri.....	Cortez F. Enloe, M.D.....	Jefferson City
Montana.....	W. F. Cogswell, M.D.....	Helena
Nebraska.....	J. D. Case, M.D.....	Lincoln
Nevada.....	S. L. Lee, M.D.....	Carson City
New Hampshire.....	Charles Duncan, M.D.....	Concord
New Jersey.....	Jacob C. Price, M.D.....	Trenton
New Mexico.....	George S. Lockett, M.D.....	Santa Fé
New York.....	Matthias Nicoll, Jr., M.D....	Albany
North Carolina.....	W. S. Rankin, M.D.....	Raleigh
North Dakota.....	A. A. Whittemore, M.D....	Bismarck
Ohio.....	John E. Monger, M.D.....	Columbus
Oklahoma.....	A. E. Davenport, M.D.....	Oklahoma City
Oregon.....	F. D. Stricker, M.D.....	Portland
Pennsylvania.....	Charles T. Miner, M.D.....	Harrisburg
Rhode Island.....	B. U. Richards, M.D.....	Providence
South Carolina.....	James A. Hayne, M.D.....	Columbia

South Dakota.....	Park B. Jenkins, M.D.....	Waubay
Tennessee.....	C. B. Crittenden, M.D.....	Nashville
Texas.....	W. H. Beazley, M.D.....	Austin
Utah.....	T. B. Beatty, M.D.....	Salt Lake City
Vermont.....	Charles F. Dalton, M.D.....	Burlington
Virginia.....	E. G. Williams, M.D.....	Richmond
West Virginia.....	W. T. Henshaw, M.D.....	Charleston
Wisconsin.....	C. A. Harper, M.D.....	Madison
Wyoming.....	G. M. Anderson, M.D.....	Cheyenne
Washington.....	Paul A. Turner, M.D.....	Seattle

APPENDIX 14

PRIVATE NATIONAL HEALTH ORGANIZATIONS AND THEIR EXECUTIVE OFFICERS †

* American Child Health Association, 532 17th Street, N.W., Washington, D. C.

Courtenay Dinwiddie, Executive Secretary.

American Dietetic Association, New Haven Hospital, New Haven, Conn.

E. M. Geraghty.

American Posture League, 1 Madison Avenue, New York City.

H. L. Taylor.

* American Public Health Association, 370 Seventh Avenue, New York City.

Homer N. Calver, Acting Executive Secretary.

* American Red Cross, 17th and D Streets, N.W., Washington, D. C.

John Barton Payne, Chairman.

* American Social Hygiene Association, 370 Seventh Avenue, New York City.

William F. Snow, General Director.

* American Society for the Control of Cancer, 370 Seventh Avenue, New York City.

F. J. Osborne, Executive Secretary.

International Health Board, 61 Broadway, New York City.

F. F. Russell, General Director.

International Society for Crippled Children, Elyria, Ohio.

Edgar F. Allen, President.

Life Extension Institute, 25 West 43rd Street, New York City.

E. L. Fisk, Director.

* National Committee for Mental Hygiene, 370 Seventh Avenue, New York City.

Frankwood E. Williams, Medical Director.

* These organizations are members of the National Health Council, 370 Seventh Avenue, New York City.

† See also Appendix 17.

- * National Committee for the Prevention of Blindness, 130 East 22nd Street, New York City.
Winifred Hathaway, Secretary.
- National Negro Health League, Tuskegee Institute, Alabama.
R. R. Moton.
- * National Organization for Public Health Nursing, 370 Seventh Avenue, New York City.
Anne A. Stevens, General Director.
- * National Tuberculosis Association, 370 Seventh Avenue, New York City.
Linsly R. Williams, Director.
- * Women's Foundation for Health, Inc., 370 Seventh Avenue, New York City.
Gertrude S. Martin, Secretary.

APPENDIX 15

NATIONAL SOCIAL AGENCIES DEALING WITH HEALTH PROBLEMS AND THEIR EXECUTIVE OFFICERS

American Academy of Political and Social Science, 36th and
Woodland Avenue, Philadelphia, Pa.

J. P. Lichtenberger.

American Association for Labor Legislation, 131 East 23rd St.,
New York City.

John B. Andrews, Secretary.

American Association for Organizing Family Social Work, 130
East 22nd Street, New York City.

David H. Holbrook, Executive Director.

American Country Life Association, Grand Central Terminal
Building, New York City.

Henry Israel, Executive Secretary.

American Occupational Therapy Association, 370 Seventh Avenue,
New York City.

American Prison Association, 135 East 15th Street, New York City.

E. R. Cass, General Secretary.

American Sociological Society, University of Chicago, Chicago, Ill.

S. E. W. Bedford.

Child Welfare League of America, 130 East 22nd Street, New
York City.

C. C. Carstens, Director.

Eugenics Registry, Battle Creek, Mich.

J. H. Kellogg, Secretary.

Joint Committee on Methods of Preventing Delinquency, 52 Van-
derbilt Avenue, New York City.

Graham Romeyn Taylor, Executive Director.

National Child Labor Committee, 105 East 22nd Street, New York
City.

Owen R. Lovejoy, Secretary.

National Conference of Social Work, 25 East Ninth Street, Cin-
cinnati, O.

W. H. Parker, Secretary.

National Consumers' League, 44 East 23rd Street, New York City.

Florence Kelley, General Secretary.

National Federation of Settlements, 20 Union Park, Boston, Mass.

Robert A. Woods, Secretary.

National Housing Association, Room 623, 105 East 22nd Street,
New York City.

Lawrence Veiller, Secretary.

National Urban League, 127 East 23rd Street, New York City.

Eugene Kinckle Jones, Executive Secretary.

Russell Sage Foundation, 130 East 22nd Street, New York City.

John M. Glenn, Director.

APPENDIX 16

NATIONAL CIVIC AND RELIGIOUS ORGANIZATIONS ACTIVE IN HEALTH WORK AND THEIR EXECUTIVE OFFICERS

- * American Association of University Women, 934 Stewart Avenue,
Ithaca, N. Y.
Gertrude S. Martin, Secretary.
- Amateur Athletic Union of the United States, 290 Broadway,
New York City.
Frederick W. Rubien, Secy.-Treas.
- * American Home Economics Association, 1211 Cathedral Street,
Baltimore, Md.
Mary E. Sweeny, Executive Secretary.
- American Physical Education Association, 93 Westford Avenue,
Springfield, Mass.
James H. McCurdy.
- Boy Scouts of America, 200 Fifth Avenue, New York City.
George J. Fisher.
- Camp Fire Girls, 31 East 17th Street, New York City.
Lester F. Scott.
- * Council of Jewish Women, Committee on Public Health, 5902
Beacon Street, Pittsburgh, Pa.
Luba Goldsmith.
- Council of Young Men's Hebrew and Kindred Associations, 141
Fifth Avenue, New York City.
- Federal Council of Churches of Christ in America, Commission
on the Church and Social Service, 105 East 22nd Street, New
York City.
Worth M. Tippy, Executive Secretary.
- * General Federation of Women's Clubs, Committee on Social Hy-
giene, 532 17th Street, N.W., Washington, D. C.
Ann Webster.
- General Federation of Women's Clubs, Department of Public
Welfare, 129 Wadsworth Avenue, New York City.
Mrs. Elmer Blair.

* These organizations are co-operating members of the Women's
Foundation for Health (see Appendix 14).

Girl Scouts, 190 Lexington Avenue, New York City.

Jane Deeter Rippin.

International Association of Rotary Clubs, 910 South Michigan Avenue, Chicago, Ill.

Chesley R. Perry, Secretary.

International Committee of Young Men's Christian Associations, 347 Madison Avenue, New York City.

John R. Mott, General Secretary.

International Kiwanis Headquarters, 164 West Jackson Boulevard, Chicago, Ill.

F. C. W. Parker, Secretary.

* Medical Women's National Association, Middletown, Conn.

Kate Campbell Mead, President.

* National Association of Deans of Women, Northwestern University, Evanston, Ill.

Marie Ross Potter, President.

* National Board of Y. W. C. A., Bureau of Social Education, 600 Lexington Avenue, New York City.

Anna L. Brown.

National Catholic Welfare Council, 1312 Massachusetts Avenue, N.W., Washington, D. C.

John J. Burke, C. S. P., General Secretary.

* National Congress of Mothers and Parent-Teacher Association, 1314 Massachusetts Avenue, N.W., Washington, D. C.

Mrs. Arthur C. Watkins, Executive Secretary.

* National Council of Women, 3125 LaFayette Avenue, St. Louis, Mo.

Mrs. Philip N. Moore, President.

* National Federation of Business and Professional Women's Clubs, First National Bank Bldg., Detroit, Mich.

Lena Lake Forest, Executive Secretary.

* National League of Girls' Clubs, 8 Newbury Street, Boston, Mass.

* National League of Women Voters, Division of Health, 706 Pontiac Building, St. Louis, Mo.

Mrs. Walter McNabb Miller, Chairman.

National Physical Education Service, Homer Building, Washington, D. C.

E. Dana Caulkins, Manager.

National Safety Council, 168 N. Michigan Avenue, Chicago, Ill.

W. H. Cameron, Executive Secretary.

* National Women's Christian Temperance Union, Health Department, 1315 North Charles Street, Baltimore, Md.

P. S. Bourdeau-Sisco, Superintendent.

- * National Women's Trade Union League, 311 South Ashland Boulevard, Chicago, Ill.
Maud Swartz, President.
- Playground and Recreation Association of America, 315 Fourth Avenue, New York City.
H. S. Braucher, Secretary.
- Scientific Temperance Federation, 73 Tremont Street, Boston, Mass.
Ema Frances Stoddard, Secretary (1918).
- * Woman's Department, National Civic Federation, 105 W. 40th Street, New York City.
Mrs. Coffin Van Rensselaer, Executive Secretary.

APPENDIX 17

ASSOCIATIONS OF PHYSICIANS AND SANITARIANS AND OTHER TECHNICAL ORGANIZATIONS DEALING WITH PUBLIC HEALTH PROBLEMS, WITH THEIR SECRETARIES OR OTHER OFFICERS *

American Association of Clinical Research

James Krauss, Secretary and Treasurer, 419 Boylston Street,
Boston, Mass.

American Association of Genito-Urinary Surgeons

Henry G. Bugbee, Secretary and Treasurer, 40 East 41st Street,
New York City.

American Association of Hospital Social Workers

Lena R. Waters, Executive Secretary, Johns Hopkins Hospital,
Baltimore, Md.

American Association of Immunologists

Arthur F. Coca, Secretary-Treasurer, 55 Delaware Avenue,
Flushing, N. Y.

American Association of Industrial Physicians and Surgeons

William A. Sawyer, Secretary, Eastman Kodak Co., Rochester,
N. Y.

American Association of Medical Milk Commissions

R. R. Ferguson, Secretary-Treasurer, 4175 Irving Park Boule-
vard, Chicago, Ill.

American Association of Obstetricians, Gynecologists, and Ab- dominal Surgeons

James E. Davis, Secretary, Detroit, Mich.

American Association of Pathologists and Bacteriologists

Howard T. Karsner, Secretary, Cleveland, Ohio.

American Association of Railway Surgeons

Louis J. Mitchell, Secretary-Editor, 29 E. Madison Street,
Chicago, Ill.

American Dermatological Association

Udo J. Wile, Secretary-Treasurer, University Hospital, Ann
Arbor, Mich.

* For complete list of medical organizations see the Directory of the
American Medical Association.

American Genetic Association

Oliver Olson, Managing Editor, *Journal of Heredity*, 111th Street, Washington, D. C.

American Gynecological Society

Arthur H. Curtis, Secretary, 104 S. Michigan Avenue, Chicago, Ill.

American Hospital Association

A. R. Warner, Executive Secretary, 22 E. Ontario Street, Chicago, Ill.

American Medical Association, Council on Health and Public Instruction, 535 North Dearborn Street, Chicago, Ill.

Victor C. Vaughan, Chairman.

American Medico-Psychological Association

H. W. Mitchell, Secretary, Warren, Pa.

American Neurological Association

Frederick Tilney, Secretary, 870 Madison Avenue, New York City.

American Ophthalmological Society

T. B. Holloway, Secretary, 1819 Chestnut Street, Philadelphia, Pa.

American Orthopedic Association

DeForest P. Willard, Secretary, 1630 Spruce Street, Philadelphia, Pa.

American Pediatric Society

Howard Childs Carpenter, Secretary and Treasurer, 1805 Spruce Street, Philadelphia, Pa.

American Psychiatric Association

C. Floyd Haviland, Secretary-Treasurer, Albany, N. Y.

American Psychopathological Association

Sanger Brown, 2d, Secretary-Treasurer, 173 E. 70th Street, New York City.

American Society of Civil Engineers, Section on Sanitary Engineering, Engineering Building, New York City.

American Society of Heating and Ventilation Engineers, 29 West 39th Street, New York City.

American Statistical Association

Robert E. Chaddock, Secretary, Kent Hall, Columbia University, New York City.

American Students' Health Association

W. E. Forsythe, Secretary, University of Michigan, Ann Arbor, Michigan.

American Urological Association

H. G. Hamer, Secretary, 723 Hume-Mansur Building, Indianapolis, Ind.

American Water Works Association, 153 West 71st Street, New York City.

Association of American Medical Colleges

Fred C. Kapffe, Secretary-Treasurer, 3431 Lexington Street, Chicago, Ill.

Association of American Teachers of the Diseases of Children

J. Victor Greenbaum, Secretary-Treasurer, 4 W. 17th Street, Cincinnati, O.

Association of Directors of Physical Education for Women

Katherine Sibley, Secretary, Syracuse, N. Y.

Association of Life Insurance Medical Directors

Angles B. Hobbs, Secretary, 346 Broadway, New York City.

Eye Sight Conservation Council

Guy A. Henry, General Director, Times Bldg., New York City.

Joint Committee on Health Problems in Education of the National Council of the National Education Association and of the American Medical Association

Thomas D. Wood, Chairman, 525 West 120th Street, New York City.

Metropolitan Life Insurance Company, 1 Madison Avenue, New York City

Lee K. Frankel, Third Vice President, in charge of Health Educational Work.

National Association of Colored Graduate Nurses

Adah B. Thomas, Concord Avenue and 141st Street, New York City.

National Association of Manufacturers, Committee on Health and Safety, 30 Church Street, New York City

Augustus Davis, Chairman.

National Medical Association (colored)

W. G. Alexander, Secretary, 279 Bank Street, Newark, N. J.

National Research Council, 1701 Massachusetts Avenue, N.W., Washington, D. C.

Vernon Kellogg, Permanent Secretary.

Society of American Bacteriologists

J. M. Sherman, Sec.-Treas., P. O. Box 184, Washington, D. C.

Society of Illuminating Engineers

E. L. Sherwood, Secretary, 29 West 39th Street, New York City.

Southern Medical Association, Birmingham, Alabama

A. P. Loran, Secretary-Manager.

APPENDIX 18

THE CALIFORNIA ANTIVIVISECTION INITIATIVE MEASURE *

Statement issued by the Regents and President of the University of California, and the Board of Trustees and President of Stanford University, opposing the measure.

The advance of sanitation, modern medicine and physiology, nutrition, the teaching of biology and the protection of our industries and agriculture all rest on animal experimentation. The control of the epidemic diseases of man and of animals, the management of surgical operations and of childbirth, and the certification of milk, food, and water supplies would be impossible without the knowledge gained by such studies. In fact, the present day protection of the public from diseases, which is vital to our community life, rests on animal experimentation. The University of California and Stanford University are vitally interested in the defeat of this initiative measure, since its passage would be a statewide calamity.

Not only would it stop the research work now going on in the medical schools, hospitals, and laboratories, and in the Bureau of Animal Industry, but it would damage the market for most of California's food products, and markedly reduce the confidence of visitors coming into the state. If California could not certify to its food and water supplies, could not guarantee protection against contagious diseases, could not provide certified milk, the effect on agriculture and industry in the state would be disastrous. The near collapse of the olive industry, due to the poisoning of a few people in eastern states, and the way in which the industry was saved by the researches carried on in the laboratories of the two universities, indicate the imperative necessity of freedom for the universities in animal experimentation. California food, instead of being looked to as an example of purity, would be shunned.

The initiative measure would make it impossible to test with birds for deadly gases in the mines of the state. It would stop the

* *Journal of the American Medical Association*, Vol. 79, No. 17 (Oct. 21, 1922), p. 1448.

manufacture of serum for the prevention of hog cholera, the preparation of vaccine for anthrax, and the various other products that are required for the protection of our industries in agriculture and that annually save millions of dollars and prevent great mortality among domestic animals. Under the act, operations on various farm animals could be carried on without anesthetics to increase the palatability of foods, but no animals could be used in experimental work if the information obtained is for the benefit of a person or of the human race.

We feel that no worse attack on the welfare of the state and on the right of the universities to seek and teach the truth could be made. Every man, woman, and child, every unborn babe, every domestic animal in the state would be affected if this measure becomes a law. It strikes at all. It is unnecessary special legislation, due to prejudice and misinformation. No one will tolerate cruelty to animals. The present laws of the state are drastic and sufficient to control any abuse. We know that there is no cruelty to animals in the laboratories of the universities. They are in charge of men and women of the highest character who are unselfishly working to better the lot of their fellow men and to advance the interests of their community and of the state. Anesthetics are always used for animals in the laboratory in exactly the same way that they are used by surgeons in the operating rooms.

We urge upon the citizens of the state the imperative necessity of defeating this initiative measure.

THE REGENTS OF THE UNIVERSITY OF CALIFORNIA,
by David P. Barrows, President of the University.
THE BOARD OF TRUSTEES OF STANFORD UNIVERSITY,
by Ray Lyman Wilbur, President of the University.

SELECTED BOOKS

FOR PERSONS ENGAGED IN HEALTH WORK *

ADMINISTRATION AND GENERAL PUBLIC HEALTH

- American Medical Association: *Nostrums and Quackery*, Vol. I (1912), 700 pp., \$1.00; Vol. II (1921) more than 800 pp., \$2.00. American Medical Association, Chicago.
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- Emerson, Haven: *A Community Health Program*, Harper, New York. In preparation.
- Fisk, Eugene L.: *Health Building and Life Extension*, Macmillan, New York, 1923. \$3.50.
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MAGAZINES AND PERIODICALS

FOR PERSONS IN PUBLIC HEALTH WORK

- American Journal of Public Health*—Published monthly by the American Public Health Association, 370 Seventh Avenue, New York City. \$5.00 a year.
- American Review of Tuberculosis*—Published monthly by the National Tuberculosis Association at 2419 Greenmont Avenue, Baltimore, Maryland. \$2.00 a year. \$3.00 to non-members.
- Hospital Social Service*—Published monthly by the Hospital Social Service Association of New York City. \$2.00 per year.
- Journal of Industrial Hygiene*—Published monthly by Macmillan Company, 64 Fifth Avenue, New York City. \$5.00 a year.
- Journal of Social Hygiene*—Published monthly by the American Social Hygiene Association, 370 Seventh Avenue, New York City. \$3.00 a year.
- Mental Hygiene*—Published quarterly by the National Committee for Mental Hygiene, 370 Seventh Avenue, New York City. \$2.00 a year.
- Monthly Digest*—Published monthly by the National Health Council, 370 Seventh Avenue, New York City. \$2.50 a year.
- Nation's Health, The*—Published monthly by the modern Hospital Company, 22 East Ontario Street, Chicago, Ill. \$3.00 a year.
- Public Health Nurse, The*—Published monthly by the National Organization for Public Health Nursing at 2157 Euclid Avenue, Cleveland, Ohio. \$2.00 a year.
- Public Health Reports*—Published weekly by the U. S. Public Health Service, Washington, D. C.

FOR GENERAL USE

- Health*—Published monthly by the Home Health Publishing Co., Room 208, 106 W. Randolph St., Chicago, Ill. \$2.00 a year.
- Hygeia*—Published monthly by the American Medical Association, 535 North Dearborn St., Chicago, Ill. \$3.00 a year.
- Journal of the Outdoor Life*—Published monthly by the National Tuberculosis Association, 370 Seventh Avenue, New York City. \$1.50 a year.

Mother and Child—Published monthly by the American Child Health Association, Washington, D. C. \$5.00 a year. \$3.00 a year to libraries, and \$2.00 a year to teachers and social workers.

Survey, The—Published twice a month by the Survey Associates, 112 East 19th St., New York City. \$5.00 a year.

FREE OR INEXPENSIVE PAMPHLETS ON PUBLIC HEALTH

Many hundreds of useful pamphlets—too many to enumerate here—are available for the use of interested persons. Many may be had without cost; for others a small charge is made.

Complete lists of these publications may be had upon application to the agencies named below.

OFFICIAL AGENCIES

Bureau of the Public Health Service, Treasury Department, Washington, D. C.

The Public Health Service issues several series of publications, including the following:

Public Health Bulletins—approximately 140 issues.

Venereal Disease Bulletins—73 in number.

Bulletins of the Hygienic Laboratory—133 in number.

(These deal entirely with technical subjects.)

Yellow Fever Institute Bulletins—17 in number.

(These technical bulletins are mostly out of print, but may be consulted at libraries.)

Reprints from the Public Health Reports—approximately 800 in number.

Supplements to the Public Health Reports—approximately 45 in number.

Keep Well Series—13 circulars for popular use.

Miscellaneous Publications—28 in number.

The Public Health Service also loans and assists the state departments of health in making available the following materials:

Posters—15 in number—on malaria, tuberculosis, the fly and other subjects.

Card Exhibits on Venereal Disease Control and Sex Hygiene for adults, young men and boys, and young women and girls.

Lantern slides.

Motion pictures.

Children's Bureau, Department of Labor, Washington, D. C.

This Bureau issues 115 publications on the following subjects:

General child welfare	Recreation
Bulletins for mothers	Delinquency
Child hygiene	Dependency and neglect
Maternal and infant hygiene	Mothers' pensions
Rural child welfare	Mental defects
Child labor and industrial problems of child welfare	Juvenile courts

Bureau of Education, Department of the Interior, Washington, D. C.

This Bureau issues various publications on school health work, child hygiene, and similar subjects.

Division of Publications, Department of Agriculture, Washington, D. C.

This agency issues several hundred "Farmers' Bulletins," a considerable number of which deal with such public health subjects as food, milk, flies, mosquitoes, sewage disposal, and water systems for farm homes.

PRIVATE AGENCIES

National Committee for Mental Hygiene, 370 Seventh Avenue, New York City.

This agency issues about 300 publications under the following heads:

Mental hygiene—general	Social service
Childhood	Delinquency and the Psychopathology of Crime
Mental disease	Statistics
Mental defects	Surveys and reports
Hospitals and clinics	
Legislation	

The American Society for the Control of Cancer, 370 Seventh Avenue, New York City.

This organization issues approximately 20 bulletins of a popular and semi-technical nature.

Association for the Prevention and Relief of Heart Disease, 370 Seventh Avenue, New York City.

This agency issues approximately 20 bulletins of a popular and semi-technical nature.

American Child Health Association, 532 17th Street, N.W., Washington, D. C.

This association issues pamphlets for schools, parents and for children, also books (including plays), posters and other educational materials.

A useful list of materials on the subject of child health published by various organizations may also be obtained.

National Organization for Public Health Nursing, 370 Seventh Avenue, New York City.

This agency publishes several pamphlets on the field of public health nursing of special interest to those considering this field as a life career.

National Tuberculosis Association, 370 Seventh Avenue, New York City.

This association publishes a large number of pamphlets, posters and other educational materials dealing with both the problem of tuberculosis and public health in general.

American Social Hygiene Association, 370 Seventh Avenue, New York City.

This agency issues numerous kinds of educational material of a popular and semi-technical nature in the fields of the family, prostitution, venereal disease, and sex education.

These include:

Reprints from the <i>Journal of Social Hygiene</i>	Books
Foreign language pamphlets	Card exhibits
Pamphlets issued originally by the U. S. Public Health Service	Lantern slides
	Posters
	Motion pictures

American Medical Association, 535 N. Dearborn St., Chicago, Ill.

This organization issues a large number of pamphlets and other educational materials under the following heads:

Nostrum evil and quackery	Protection of research
Baby welfare	Medical cults
Score cards, tables, and posters	Hospitals and dispensaries
Sex education	Various series for practitioners
Public health	Posters
Cancer	Cartoons
Conservation of vision	Lantern slides
Medico-legal publications	

NOTES

ABBREVIATIONS USED IN NOTES

- J. A. M. A.—*Journal of the American Medical Association*, 535 North Dearborn Street, Chicago, Illinois.
- A. J. P. H.—*American Journal of Public Health*, American Public Health Association, 370 Seventh Avenue, New York City.
- P. H. R. —*Public Health Reports*, U. S. Public Health Service, Washington, D. C.
- P. H. S. —U. S. Public Health Service, Washington, D. C.
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NOTES

CHAPTER I

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CHAPTER II

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15. Rosenau: p. 477.
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18. Statistical Bulletin, Metropolitan Life Insurance Company, Vol. 3, No. 10 (Oct., 1922), p. 1.
19. Calculated from Birth Statistics 1919, Bureau of the Census, pp. 288-301.
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34. Rosenau, p. 163.
35. Rosenau, p. 231.

CHAPTER III

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3. *The American Medical Directory*, 1921, pp. 1277-1279.
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10. Supplement to the Monthly Vital Statistics Review, New York State Department of Health, Vol. II, No. 12 (Feb., 1922), p. 204.
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13. Calculated from Collins' "Sickness Among School Children": *op. cit.*
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5. E. L. Fisk: "Periodic Physical Examinations, A National Need," *The Nation's Health*, May, 1921, pp. 287-8.
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CHAPTER V

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CHAPTER VI

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4. F. H. Garrison: *History of Medicine*, Saunders, Philadelphia, 1914, pp. 519-20.
5. J. A. Thomson: *The Outline of Science*, Putnam, New York, 1922, Vol. IV, Chap. XXVII, by E. R. Lankester: "Bacteria," p. 886.
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7. *Dictionary of National Biography* (Edited by Sidney Lee), Macmillan, New York, 1892, Vol. XXIX, pp. 321-5; J. N. Larned: *History for Ready Reference*, Nichols, Cambridge, Mass., 1894, Vol. III, pp. 2140-1; Rosenau, pp. 1 *et seq.*
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CHAPTER VIII

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CHAPTER IX

NOSTRUMS AND QUACKERY

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4. The larger amount was obtained by dividing \$182,991,936 (the value at factory of all medicines excepting biologic products), plus 80 per cent, by 107,000,000, the approximate population for 1921; and the smaller amount by dividing \$60,000,000 (see Chap. XX, page 413) by 107,000,000.
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7. The Washington (D. C.) *Post*, June 18, 1922.
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9. *Ibid.*, pp. 535-543.
10. *Ibid.*, pp. 564-575.
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19. *Ibid.*, No. 10.
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30. Cramp: *op. cit.*, p. 798.
31. *Ibid.*, p. 799.
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CHAPTER X

HEALTH ACTIVITIES MORE OR LESS MISDIRECTED

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2. *Ibid.*, June, 1922, p. 42.
3. *Ibid.*, Feb., 1922, p. 41 *et seq.*
4. *Ibid.*, June, 1922.
5. *Ibid.*, Jan., 1922, p. 45 *et seq.*
6. *Ibid.*, Nov., 1922, p. 22.
7. *Ibid.*, June, 1922.
8. Channing Frothingham: "Osteopathy, Chiropractic and the Profession of Medicine," *The Atlantic Monthly*, July, 1922, pp. 75-81.
9. *Ibid.*
10. Severance Johnson: "Is It Chiro-quack-tic?" A series of articles in *Leslie's Weekly*, Vol. CXXXIV, Jan. 7 to Mar. 18, 1922. (All data on chiropractic are taken from these articles except as noted.)

11. *Physical Culture*, May, 1922, p. 6.
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13. J. A. M. A., Nov. 6, 1920.
14. *Ibid.*, Mar. 5, 1921.
15. *Federation Bulletin of the Federation of State Medical Boards of the United States*, Jan., 1920, pp. 17-24.
16. *Ibid.*, June, 1922, p. 129.
17. A letter to the author from the American Medical Association dated Feb. 12, 1923.
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20. *Ibid.*, June 19, 1920.
21. *Ibid.*, June 10, 1922.
22. *The World Almanac and Encyclopedia*, 1922, p. 267.
23. Mary Baker Eddy: *Science and Health*, The Christian Science Publishing Company, Boston, p. 107.
24. *Ibid.*, p. 393.
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CHAPTER XX

PUBLIC ECONOMY AND PUBLIC HEALTH

1. 1,390,000 deaths per year (on the basis of 1,142,558 for registration area) means over 3,800 per day or 158 per hour. Assuming that 40 per cent are preventable or postponable, there are, therefore, over 60 deaths per hour preventable or postponable.
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3. *Ibid.*, pp. A63 and A70.
4. United States Department of Agriculture: *Year Book*, 1920, pp. 340 and 348-9.
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6. Bureau of the Census: *Financial Statistics of Cities Having a Population of over 30,000*, 1921, pp. 9 and 96-7.
7. Chap. XI (this volume), page 223.
8. Bureau of the Census: *Statistical Directory of State Institutions for the Defective, Dependent and Delinquent Classes*, 1915, p. 7.
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10. Message of the President, *op. cit.*, Chart 5, facing p. A5. See also Statement No. 9, facing p. A48.
11. *Ibid.*, pp. A9 to A26; also statement facing p. A48.
12. J. A. M. A., Vol. LXXVIII, No. 11 (Mar. 18, 1922), p. 807.
13. The fiscal year for cities and states ends at various times during the year, and for the federal government June 30th. This lack

of uniformity is ignored, since only rough estimates are necessary for present purposes.

14. P. H. S. Reprints Nos. 605, 706 and 775.
15. For 1920 Freeman's estimate is used, P. H. S. Bulletin No. 126, p. 6; for 1921 and 1922 see Bureau of the Census: Financial Statistics of Cities Having a Population of over 30,000, 1921, pp. 96-101. (\$7,500,000 is added for cities in above group not reporting and for cities of 10,000 to 30,000 population not included in census report.)
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4. Articles by Frederick Palmer in *Collier's*, various issues October to November, 1922.
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